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This report summarizes the results obtained on the $H_2{}^{16}O$ absorption spectrum in the spectral regions 8000-11500/cm and 13500-22700/cm. The spectra were recorded at high resolution with a Fourier transform spectrometer using a multipath cell allowing path lengths up to 434 m. A thorough analysis has been performed and greatly improved line positions, intensities and assignments have been obtained providing a precise and complete picture of the $H_2{}^{16}O$ spectra in the concerned spectral regions.

These results of important atmospheric interest will be included in the next version of the HITRAN data base.

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STUDY OF HIGH FREQUENCY WATER VAPOR ABSORPTION PARAMETERS

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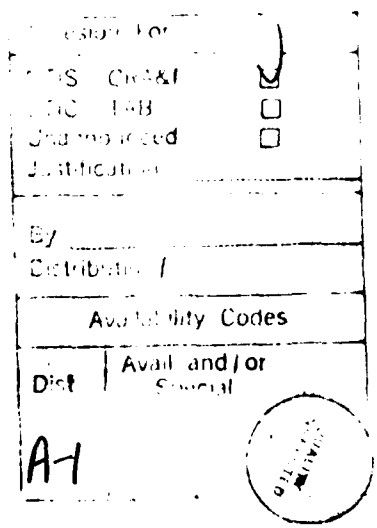

Optical remote sensing and studies of the propagation of radiation through long atmospheric paths require a precise knowledge of the spectral parameters of molecular absorbers contributing to the opacity. Because of technological considerations, the first spectroscopic efforts were devoted to the mid and infrared regions. Recent advances in optics have now created a need for precise spectroscopic data from the near-infrared to the visible and the purpose of the project was to improve the spectroscopic parameters of water vapor which is, with oxygen, the main atmospheric absorber in this spectral region.

Our work during the three years period of the contract has concerned the following spectral regions :

13500 - 22700 cm^{-1} [Ref.1,2]
8000 - 9500 cm^{-1} [Ref.3]
9500 - 11500 cm^{-1} [Ref.4]

and the following improvements* have been achieved as compared to the existing $H_2{}^{16}O$ data presently reported in the HITRAN data base.

Line positions.

The accuracy on the line positions measured in the present work is, for well isolated lines, varying from 0.5×10^{-3} to 2×10^{-3} cm^{-1} depending on the spectral region; this improves greatly upon the previous data (accuracy $\simeq 10^{-2}$ cm^{-1} for the better lines).

- Line assignments.

Real progress have been made in assigning the lines. In particular many new resonating lines have been attributed and some previous assignments were found erroneous.

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*We give in this first part only the salient facts of the work. Far more details, the reader is requested to refer to the Appendix where the analysis process, the theoretical problems and the results are extensively described.

- Line intensities.

The average uncertainty on the line intensities is about 6-10% (However errors up to 50% exist for heavily blended lines). The lines intensities were measured either by the curve of growth method or using the peak absorption method (See Ref.3 for details). In this way, the intensities of all the observed lines were derived and it has to be underlined again that a real improvement has been obtained : For example, the results quoted in Table V of Ref.[3] show clearly that the previous intensities listed in the HITRAN data base are in error by a factor ranging from 2 to 7.

All the results (line position and intensities) which give a precise and complete picture of the $H_2{}^{16}O$ absorption in the spectral ranges 8500 - 11500 and 13500 - 25250 cm^{-1} have been given through diskettes to L.S. Rothman who is charge of the HITRAN data base and should be included in the next version of the base. As a whole it appears that the contract has been properly fulfilled and has produced interesting scientific results.

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Can.J.Phys. (Submitted).

APPENDIX

Detailed description of the spectral regions :

16500 - 22700 cm^{-1}

13200 - 16500 cm^{-1}

8000 - 9500 cm^{-1}

9500 - 11500 cm^{-1}

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[3]

$H_2{}^{16}O$: Line positions and intensities between 8000 and 9500 cm^{-1}: the second hexad of interacting vibrational states: {(050), (130), (031), (210), (111), (012)}

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Water vapor Fourier-transform spectra (resolution = 0.010 cm^{-1}) have been analyzed between 8000 and 9500 cm^{-1}. Accurate values of 441 rotational energy levels, belonging to the vibrational states (050), (130), (031), (210), (111), and (012) of the second hexad of $H_2{}^{16}O$, have been determined. Moreover, 500 line intensities have been accurately measured (uncertainty = 6%). To increase the number of experimental intensities (useful for atmospheric applications), we have set up a less sophisticated but faster method; this has led to the measurement of 1200 additional intensities, with an average uncertainty of about 10%.

Des spectres par transformée de Fourier de la vapeur d'eau (résolution = 0.010 cm^{-1}) ont été analysés entre 8000 et 9500 cm^{-1}. Les valeurs précises de 441 niveaux d'énergie rotationnels, appartenant aux états vibrationnels (050), (130), (031), (210), (111), et (012) de la deuxième hexade d'$H_2{}^{16}O$, ont été déterminées. De plus, on a mesuré avec précision les intensités de 500 raies (incertitude = 6%). Dans le but d'augmenter le nombre d'intensités expérimentales (utiles pour les applications atmosphériques), une méthode moins sophistiquée mais plus rapide a été mise au point et a permis de mesurer 1200 intensités supplémentaires, avec une incertitude moyenne d'environ 10%.

Can. J. Phys. 66, 997 (1988)

1. Introduction

For atmospheric applications, it is important to know accurately the vibration–rotation spectrum of water. As a continuation of our previous work on this molecule, this paper presents a study of the 8000–9500 cm^{-1} spectral region. This region was first analyzed by Benedict (1), and improved results were later introduced by him in the atmospheric compilations (2). Then, using a grating spectrum of room-temperature water vapor and a Fourier-transform spectrum of heated water vapor (T = 330 K), both recorded with a resolution of 0.07 cm^{-1}, Flaud *et al.* (3) improved the accuracy of the energy levels. Finally, with the aid of oxygen–hydrogen flame spectra recorded on a Fourier-transform interferometer between 6400 and 7600 cm^{-1}, Camy-Peyret *et al.* (4) analyzed the $\nu_1 + \nu_2 + \nu_3 - \nu_2$ hot band and were able to determine rotational levels of the (111) vibrational state corresponding to high values of the J quantum number (up to J = 26). To observe new levels and to improve the accuracy of the previous results, we have studied several spectra (resolution = 0.010 cm^{-1}) recorded with the Fourier-transform spectrometer built by Brault (5) at the National Solar Observatory, Kitt Peak, AZ.

The analysis of these spectra has led to the determination of 441 accurate rotational energy levels belonging to the so-called second hexad of interacting vibrational states: {(050), (130), (031), (210), (111), (012)}.

To study high-resolution atmospheric spectra, one must know more than the wavenumbers and the assignments of the observable $H_2{}^{16}O$ lines; it is also important to have at hand a complete and reliable list of individual line intensities. In the studied spectral region, knowledge of experimental intensities has been somewhat poor. Let us mention one temperature-insensitive line measured by Brault *et al.* (6) (uncertainty = 10%) and 33 line intensities measured by Cherepanov *et al.* (7) (uncertainty = 10%). That is why we have first measured 500 line intensities accurately (uncertainty = 6%). Besides, to extend this set of values, we have set up and successfully tested a faster method to obtain the intensities of all the other lines pertaining to the $H_2{}^{16}O$ molecule. Thus, 1200 additional intensities have been measured, with an average uncertainty of about 10%. The method is described in Sect. 3, where the measured intensities are discussed.

2. Experimental details and analysis

Since numerous isotopic species of water absorb simultaneously, it is very useful to have spectra corresponding to different ratios of isotopic concentrations at one's disposal when assigning each line to a peculiar absorber, i.e., mainly $H_2{}^{16}O$, $H_2{}^{18}O$, or $H_2{}^{17}O$. For this reason, natural, ^{18}O-enriched, and ^{17}O-enriched water vapor spectra have been recorded with the aid of Brault's Fourier-transform apparatus (5). Moreover, because of the large range of line intensities, several spectra have been recorded at various path lengths and pressures, allowing us to cover a sufficiently large set of $H_2{}^{16}O$ optical thicknesses. Thus, it is possible to measure the intensities of strong lines (up to 2.8×10^{-2} $cm^{-2} \cdot atm^{-1}$) as well as very weak lines (as low as 5×10^{-7} $cm^{-2} \cdot atm^{-1}$) (1 atm = 101.3 kPa). The experimental conditions and characteristics of the spectra are given in Table 1.

To give an idea of the complexity of the spectrum, in Table 2 we report measured or previously computed band centers and band strengths for the main bands appearing in the studied spectral region. One can see that six interacting vibrational states are involved; they form the second hexad of H_2O, i.e., {(050), (130), (031), (210), (111), (012)}. The six corresponding cold bands have been observed, revealing numerous resonances that have complicated the assignments.

As an example, the $5\nu_2$ band could be observed owing to three strong interactions; two of them have been previously calculated by Ulenikov and Ushakova (8). These interactions occur between the levels (050)[761] and (130)[743], between (050)[660] and (210)[606], and between (050)[661] and (130)[643]. For these pairs of interacting states, the mixing of the wavefunctions is so important that the assignment of the vibrational quantum numbers to each level is difficult. Thus, at the present time, the proposed attributions are a matter of convention.

Another example of strong perturbation involves the vibrational state (060), which actually pertains to the first decad. It exhibits a quadruple interaction (3) between the levels (060)[616], (130)[652], (210)[634], and (111)[624], so that the very weak $6\nu_2$ band can be observed through seven lines, corresponding to transitions arriving at the resonant level (060)[616].

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TABLE 1. Experimental conditions and characteristics of the absorption spectra (1 atm = 101.3 kPa)

Type of spectrum	Unapodized resolution (10^{-3} cm^{-1})	Total pressure $P \pm 1\%$ (10^{-3} atm)	Average Lorentz half-width γ^L (10^{-3} cm^{-1})	Absorption path l (cm)	$H_2{}^{16}O$ concentration x	$H_2{}^{16}O$ optical thickness $x P l$ (cm·atm)
Natural	17.4	22.8	9.3	43 396	0.997	986
	14.5	1.97	0.8	43 396	0.997	85.3
^{18}O enriched	11.2	3.68	1.5	21 742	0.27±0.01	21.6
	11.2	3.68	1.5	4 900	0.27±0.01	4.87
	11.2	0.96	0.4	2 494	0.27±0.01	0.65
^{17}O enriched	11.2	6.18	2.5	21 742	0.79±0.03	106

Studied spectral region: 7900–9500 cm^{-1} Cell temperature: 300 ± 0.5 K
Signal-to-noise ratio: 500–2300 Average Doppler half-width γ^D: 0.013 cm^{-1}

It was also possible to assign some lines in the $\nu_1 + 2\nu_2 + \nu_3 - \nu_2$ hot band.

The rotational energy levels of the second hexad are reported in Table 3. These new results are in good agreement with and improve upon our previous results (3, 4), as far as the accuracy and the coverage are concerned. The wavenumbers of the observed lines are listed in Table 4 along with their measured intensities, which are discussed in the next section.

3. Line intensities

We have already described the procedure used to derive precise, absolute $H_2{}^{16}O$ line intensities (10). There are two main sources of difficulties: first, the necessity to accurately check the total pressure of H_2O in natural spectra, and to recalibrate the absolute concentrations of $H_2{}^{16}O$ in the ^{18}O- and ^{17}O-enriched samples; second, the determination of the residual absorption due to traces of atmospheric water along the optical path. These two problems have been solved as explained in ref. 10, thus allowing us to perform reliable intensity measurements.

3.1. Measurement of line intensities by the curve-of-growth method: discussion of the results

The curve of growth of the equivalent-width method was used under the conditions described in ref. 11. In this way, the intensities of all the well-isolated lines were measured, with an average uncertainty of 6%. These values are listed in Table 4.

Since 31 of these 500 intensities had already been measured by other authors (6, 7), comparisons have been made between their results and ours (Table 5). For each line, the ratio R of the two available intensities has been calculated, and we find an average value $\bar{R} = 1.03 \pm 0.08$, which denotes a negligible systematic shift inside the stated uncertainties. Therefore, it appears that the consistency of these two independant sets of results is excellent, allowing us to ascertain that reliable absolute intensities have been obtained in the present work.

We have also listed in Table 5 the intensities introduced by Benedict in the atmospheric compilations (2). Although these previous values reproduce the relative line strengths well enough, large discrepancies appear with the measured absolute values, confirming the need of precise, individual line-intensity measurements to generate a reliable database.

3.2. Measurement of line intensities by the central-depth method

To complete the set of intensities obtained above, we have used a faster method (12). This method is based on the fact that the central depth $\mathcal{A}(\sigma_0)$ of a line, observed under infinite resolution and centered at the wavenumber σ_0, is related to its intensity S^0 (in cm^{-2}·atm^{-1}) by

$$[1] \quad \mathcal{A}(\sigma_0) = 1 - \exp\{-(S^0 x P l/\gamma^D)(\log 2/\pi)^{1/2} k[0, (\log 2)^{1/2}\gamma^L/\gamma^D]\}$$

where $k(0,y)$ is the value of the reduced Voigt profile at the center of the line (see Table 1 for the other notations). For the low pressures that we are concerned with, the variation of the term between the braces from one line to another is mainly due to the variations of S^0 and γ^D, which is proportional to σ_0; thus,

$$[2] \quad \mathcal{A}(\sigma_0) = 1 - \exp(-S^0\alpha/\sigma_0)$$

α being a constant. This is equivalent to

$$[3] \quad \alpha = -(\sigma_0/S^0)\log[1 - \mathcal{A}(\sigma_0)]$$

For each recorded spectrum, an average value of the coefficient α is determined from the available experimental results, i.e., the line intensities previously obtained by the curve-of-growth method and the corresponding line depths. Then, for this spectrum, the average value of α is used to derive the intensities of the other lines from their measured depths.

TABLE 2. Positions and intensities of the main $H_2{}^{16}O$ bands appearing between 7500 and 9500 cm^{-1}

Band	Band center (cm^{-1})	Band intensity (10^{-22} cm^{-1}/(molecule·cm^{-2}) at 296 K)
$5\nu_2$	7552.0[a]	0.028[b]
$4\nu_2 + \nu_3 - \nu_2$	8238.84[c,d]	0.059[c]
$\nu_1 + 3\nu_2$	8273.9757[e]	2.4[c]
$3\nu_2 + \nu_3$	8373.8526[e]	36[c]
$\nu_1 + 2\nu_2 + \nu_3 - \nu_2$	8733.9846[e]	0.41[c]
$2\nu_1 + \nu_2$	8761.5820[e]	3.6[c]
$\nu_1 + \nu_2 + \nu_3$	8807.0003[e]	498[c]
$6\nu_2$	≈8890	1.2[f]
$\nu_2 + 2\nu_3$	9000.1365[e]	12[c]

[a] Value calculated by Ulenikov and Ushakova (8).
[b] Measured value ±20% (this work), equal to the sum of the intensities of eight lines due to three resonating levels of (050).
[c] Value from ref. 2.
[d] At room temperature, this weak hot band is not observable.
[e] Experimental value (this work).
[f] Measured value ±20% (this work), equal to the sum of the intensities of seven lines due to the resonating level (060)[616].

TABLE 3. Experimental rotational energy levels for the vibrational states (050), (130), (031), (210), (111), and (012) of the second hexad of $H_2{}^{16}O$

			0 5 0			1 3 0			0 3 1			2 1 0			1 1 1			0 1 2		
J	KA	KC	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N
0	0	0				8273.8757	0.9	1	8373.8528	0.9	1	8781.5820	0.9	1	8807.0003	0.9	1	9000.1365	0.9	1
1	0	1				8297.3748	0.8	2	8397.4851	0.8	3	8784.8599	0.8	2	8830.2318	0.5	3	9023.4901	0.8	2
1	1	1				8323.2934	0.5	3	8421.1849	0.8	2	8799.8411	0.8	3	8844.5372	0.6	2	9037.1985	0.9	3
1	1	0				8329.3675	0.9	2	8427.3578	0.8	2	8808.1589	0.8	2	8850.1068	0.9	2	9042.8357	0.9	2
2	0	2				8343.1816	0.5	3	8443.6487	0.4	4	8826.6301	0.6	3	8875.3068	0.4	4	9068.7511	0.5	3
2	1	2				8364.0887	0.4	4	8462.4838	0.5	3	8840.2759	0.5	3	8885.2071	0.5	4	9078.2832	0.8	2
2	1	1				8382.2429	0.5	3	8480.8398	0.5	4	8858.7782	0.8	3	8903.4871	0.5	4	9095.1840	0.5	3
2	2	1				8456.9515	0.4	4	8548.9855	0.5	3	8899.8365	0.4	4	8944.6328	0.8	3	9135.8432	0.4	4
2	2	0				8457.7662	0.8	3	8551.0248	0.4	4	8902.6981	0.5	4	8945.9844	0.4	4	9137.2544	0.5	4
3	0	3				8408.8032	0.5	3	8510.3748	0.5	4	8894.0343	0.5	3	8939.9838	0.4	5	9133.5817	0.5	4
3	1	3				8424.8073	0.5	4	8523.1089	0.4	4	8900.4898	0.5	4	8945.8631	0.4	5	9139.0696	0.5	4
3	1	2				8460.7883	0.4	4	8560.1444	0.5	4	8933.2054	0.8	4	8978.8748	0.4	5	9172.5097	0.4	4
3	2	2				8527.3214	0.4	5	8620.9525	0.5	5	8988.7593	0.4	5	9014.0213	0.4	5	9205.8693	0.5	5
3	2	1				8532.1231	0.4	5	8625.8978	0.5	4	8976.5490	0.4	4	9020.1745	0.4	6	9212.4698	0.4	5
3	3	1				8660.8491	0.8	4	8748.5280	0.5	3	9057.7873	0.8	3	9098.3970	0.5	5	9287.2050	0.5	5
3	3	0				8660.7373	0.4	5	8748.8485	0.8	2	9057.9240	0.4	5	9098.8098	0.5	4	9287.4388	0.4	5
4	0	4				8494.6658	0.5	3	8595.5868	0.4	4	8978.3024	0.8	3	9022.3355	0.4	5	9218.1529	0.4	6
4	1	4				8504.3714	0.4	4	8603.4906	0.5	3	8979.6580	0.5	4	9025.1513	0.5	4	9218.8597	0.5	3
4	1	3				8583.8942	1.7	3	8684.1048	0.4	4	9033.0270	0.8	3	9079.7163	0.4	6	9273.2382	0.5	5
4	2	3				8620.2655	0.4	5	8714.6102	0.5	4	9061.1532	0.4	4	9105.4314	0.4	6	9288.2124	0.4	5
4	2	2				8633.0957	0.4	5	8728.4734	0.4	4	9077.3573	0.5	4	9121.5192	0.3	7	9315.1839	0.5	4
4	1	2				8758.5309	0.4	6	8843.2422	0.5	3	9152.8024	0.4	6	9193.1213	0.5	4	9383.1179	0.4	6
4	3	1				8757.1408	0.4	5	8844.0501	0.4	5	9153.6465	0.8	5	9194.5310	0.3	7	9384.6500	0.5	5
4	4	1				8929.4482	0.5	5	9008.5811	0.9	2	9288.0138	0.9	1	9305.9035	0.6	3	9490.9535	0.5	3
4	4	0				8929.4538	0.8	4	9008.6028	0.9	3				9305.5227	0.4	4	9490.9858	0.8	3
5	0	5				8598.8953	0.6	3	8697.9984	0.5	4	9078.6041	0.6	3	9121.7438	0.5	5	9318.1914	0.4	5
5	1	5				8602.7915	0.6	3	8702.4830	0.8	3	9077.1775	0.8	3	9123.0328	0.4	5	9317.0855	0.5	4
5	1	4				8690.1070	0.4	4	8791.0098	0.5	3	9154.1591	0.4	4	9200.8851	0.5	5	9394.9785	0.4	4
5	2	4				8735.0801	0.4	5	8830.1735	0.4	5	9173.5681	0.5	5	9218.0423	0.4	6	9411.6378	0.5	5
5	2	3				8781.8609	0.4	5	8858.6007	0.5	3	9204.8481	0.4	6	9249.2424	0.4	6	9444.8903	0.4	5
5	3	3				8878.3471	0.8	4	8964.0548	0.4	5	9271.2984	0.8	5	9310.9958	0.3	8	9502.7010	0.4	6
5	3	2				8878.5865	0.4	5	8967.1091	2.1	2	9275.0795	0.4	5	9316.3730	0.4	5	9508.2270	0.4	6
5	4	2							9127.9581	0.5	4				9424.3701	0.4	7	9611.5374	0.4	5
5	4	1							9128.0922	0.5	3				9424.5443	0.4	6	9611.8088	0.4	5
5	5	1				9297.2198	0.9	5	9324.0661	0.5	3				9583.9958	0.6	4	9745.1993	0.9	3
5	5	0				9297.2379	0.9	4	9324.1040	0.5	5				9583.9958	2.8	3	9745.1993	0.5	4
6	0	6				8715.9808	0.8	3	8817.2439	0.4	3	9191.6591	2.0	3	9238.3324	0.4	5	9432.5134	0.5	4
6	1	6				8719.4086	0.5	3	8818.6842	0.5	3	9192.8429	0.8	4	9238.8819	0.5	4	9433.5040	0.4	4
6	1	5				8837.4273	0.8	4	8938.8840	0.5	4				9340.9727	0.4	6	9539.4280	0.5	5
6	2	5				8870.9870	0.5	4	8968.7914	0.8	3	9308.1218	0.5	4	9350.9494	0.4	6	9545.3639	0.4	5
6	2	4				8917.0931	0.9	2	9014.0735	0.4	4				9399.9911	0.4	6	9599.1813	0.5	4
6	3	4				9021.0702	0.5	5	9108.5450	0.5	4	9414.2549	0.4	6	9452.7325	0.4	5	9649.2488	0.4	7
6	3	3							9118.8814	0.4	4	9423.8493	0.9	1	9485.1068	0.3	8	9657.8168	0.9	2
6	4	3				9199.3847	29.1	1	9272.6265	0.9	3				9587.3099	0.5	4	9758.3072	0.1	8
6	4	2							9274.1469	0.4	4				9588.2089	0.3	7	9757.9498	0.5	5
6	5	2				9402.2344	0.4	8	9470.2122	0.5	4				9706.8013	0.5	6	9891.1582	0.4	4
6	5	1							9470.6558	0.4	8				9706.8066	0.6	7	9891.1968	0.8	3
6	6	1	9194.0115	0.5	5				9692.4978	0.9	2				9871.1643	0.9	3	10047.5192	0.9	2
6	6	0	9192.1774	2.9	2				9692.5019	0.8	2				9871.1643	0.8	3	10047.5192	2.7	2
7	0	7				8851.8542	0.8	3	8953.4264	0.8	3	9325.4387	0.8	3	9372.2051	0.8	4	9568.8993	0.5	3
7	1	7				8853.8840	0.9	2	8954.7158	0.5	3	9325.1142	0.9	2	9372.4745	0.4	4	9568.5014	1.7	3
7	1	6				9003.7457	0.5	4	9104.9310	0.9	3	9451.2803	2.0	3	9497.9804	0.4	5	9692.2730	0.5	4
7	2	6							9123.5949	0.4	4	9457.9571	0.9	2	9503.2484	0.5	5	9700.3276	0.5	5
7	2	5				9087.9341	0.8	5	9199.8898	0.8	2				9586.8990	0.4	7	9778.2406	0.4	4
7	3	5							9276.0491	0.4	6	9587.7718	0.5	7	9815.9478	0.4	8	9800.8121	0.5	6
7	3	4							9296.3727	6.2	2				9644.3091	0.5	5	9836.4775	0.8	2
7	4	4							9443.3900	0.4	6				9734.0905	0.4	6	9924.9838	0.9	3
7	4	3				9382.8592	2.1	3	9445.1825	1.7	4				9737.3058	0.4	7	9929.0171	0.4	8
7	5	3				9572.9497	0.4	7	9840.5213	0.4	5				9873.2257	0.4	6	10080.9115	0.7	4
7	5	2							9838.4577	0.4	8	9842.8082	0.5	8	9873.2855	0.5	5	10081.1707	0.4	6
7	6	2							9883.1389	0.9	3				10037.1317	0.8	4	10213.7228	0.7	4
7	6	1	9368.9179	2.9	1				9883.1707	29.1	2				10037.1317	8.0	3	10213.7248	0.8	4
7	7	1							10108.3060	0.9	1				10232.2950	0.6	4	10398.4564	2.7	2
7	7	0							10108.3080	0.9	1				10232.2950	2.8	3	10398.4584	0.9	2
8	0	8				9004.7029	0.8	2	9106.7089	0.8	3	9478.3879	0.9	2	9523.4780	0.5	4	9718.2036	0.9	2
8	1	8				9006.0361	0.9	3	9107.2179	0.8	2	9478.5080	0.9	2	9523.8110	0.5	3	9718.5384	0.9	3
8	1	7				9188.6963	2.9	1	9288.1802	0.8	3				9611.4469	0.4	8			
8	2	7				9203.1157	0.8	4	9299.7802	0.7	2	9628.3898	0.9	2	9674.2219	0.5	5	9868.3028	0.5	6
8	2	6							9404.8659	0.5	5				9779.2075	0.4	8	9973.1288	0.8	4
8	3	6							9485.8532	0.8	2	9793.9282	0.8	5	9800.4095	0.4	5	9995.3737	0.6	6
8	3	5							9499.8484	0.8	4				9846.9298	0.4	5	10045.2995	0.8	3
8	4	5													9924.1837	0.5	5	10117.0081	0.5	4
8	4	4							9641.8870	0.8	7				9932.8918	0.4	8			
8	5	4													10083.8795	0.5	5	10254.0702	0.8	7
8	5	3							9833.4330	0.5	6				10084.2421	0.4	6	10255.2008	0.5	6
8	6	3													10227.1479	0.7	4	10404.0878	2.1	3
8	6	2							10057.8495	0.8	3				10227.0278	0.4	4			
9	7	2							10300.9378	1.7	3				10426.4278	0.6	4	10587.9557	0.8	2
9	7	1							10300.9404	0.5	4				10426.4278	0.5	5	10587.9557	3.3	1
8	8	1													10640.0840	2.9	2			
8	8	0													10640.0880	0.9	2			

TABLE 3 (*concluded*)

	0 5 0			1 3 0			0 3 1			2 1 0			1 1 1			0 1 2		
J KA KC	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N	E CM-1	DELTA.E 10-3CM-1	N
9 0 9				9174.6819	0.9	3	9277.2104	0.9	2	9844.4685	0.9	3	9692.2143	0.5	3	9887.5627	0.6	2
9 1 9				9175.8324	2.8	2	9277.4790	0.8	2	9844.8158	0.9	1	9692.6050	0.5	3	9887.7525	0.9	1
9 1 8							9487.8495	0.9	2	9814.7723	0.6	3	9861.6305	0.5	3	10056.7639	0.6	3
9 2 8							9494.6859	0.6	3				9864.4590	0.5	4	10058.4878	0.7	3
9 2 7													9992.9766	0.5	4	10187.4147	0.8	4
9 3 7							9678.3813	0.4	6				10005.0819	0.4	5	10201.0263	0.5	6
9 3 6													10074.8897	0.5	5	10274.5649	0.6	5
9 4 6													10138.8397	0.4	6			
9 4 5													10155.8777	0.5	4	10353.0279	0.9	3
9 5 5													10278.3743	0.4	5	10471.4889	0.6	3
9 5 4													10279.8565	0.5	4	10472.8579	0.6	5
9 6 4													10441.1774	0.4	4			
9 6 3													10440.8380	1.0	2			
9 7 3													10643.9177	0.8	5			
9 7 2													10843.9177	20.8	2			
9 8 2													10858.1277	0.9	1			
9 8 1													10858.1278	1.0	2			
10 0 10							9485.0015	0.8	2	9830.1664	0.9	1	9878.8037	0.5	3	10074.3484	1.0	1
10 1 10							9485.0855	2.1	2	9830.8472	0.9	2	9877.8128	0.6	3	10074.4620	0.9	1
10 1 9													10068.8806	0.5	3			
10 2 9										10024.7005	0.9	1	10088.0838	0.7	3			
10 2 8							9872.6004	0.6	4				10224.7898	0.4	4			
10 3 8				9884.1758	0.5	3				10217.8213	0.8	5	10229.0245	0.6	4			
10 3 7													10320.6870	0.6	4			
10 4 7										10338.2143	0.5	5	10371.1901	0.7	5			
10 4 6													10404.8768	0.4	5			
10 5 6													10516.2292	0.5	4			
10 5 5													10520.7173	0.6	3			
10 6 4													10678.4307	0.5	3			
10 7 4													10884.5566	29.1	1			
10 7 3													10884.5606	0.9	2			
10 8 3													11101.4425	29.1	1			
10 8 2													11101.4425	20.8	2			
11 0 11										10033.0471	2.9	1	10081.4474	0.9	2			
11 1 11							9670.0734	0.9	2	10032.4541	0.9	1	10081.4154	0.9	2			
11 1 10													10294.5892	0.7	3			
11 2 10													10292.3508	0.9	3			
11 2 9													10467.8118	0.7	4			
11 3 9													10471.3805	0.6	4			
11 4 8													10626.2574	0.6	5			
11 5 7													10776.7346	0.5	4			
11 6 6													10940.8073	0.8	3			
11 7 5													11148.8293	0.9	3			
11 8 4													11368.7878	2.9	1			
11 8 3													11368.7928	8.4	2			
12 0 12							9892.8882	0.9	2				10301.7403	0.6	2			
12 1 12													10301.4568	0.7	2			
12 1 11													10532.2580	0.9	3			
12 2 11													10533.7054	0.7	3			
12 2 10													10731.0789	2.0	3			
12 3 10													10731.5160	1.0	1			
12 3 9													10887.8179	0.9	2			
12 4 8													10981.4980	0.9	2			
12 5 7													11078.8883	0.9	2			
13 0 13													10539.7898	1.0	2			
13 1 13													10539.7906	0.7	2			
13 1 12													10791.4106	1.0	1			
13 2 12													10789.7827	0.9	1			
13 3 11													11009.0879	0.9	3			
13 8 8													11532.8729	0.9	1			
14 0 14													10794.8892	0.9	2			
14 1 14													10794.9025	5.2	2			
14 1 13													11067.0838	0.9	1			
14 2 12													11301.7008	2.9	1			
14 3 11													11495.1448	8.7	1			
15 0 15													11067.0750	3.0	1			
15 1 15													11067.0754	0.9	1			
15 2 14													11350.6861	2.9	1			
16 0 16													11350.2783	2.9	1			
16 1 16													11350.2788	29.1	1			
17 0 17													11682.4272	8.8	1			
17 1 17													11682.4274	2.9	1			

NOTES: E: the experimental energy in cm^{-1}. DELTA.E: the uncertainty in the energy value, equal to one standard deviation in units of $10^{-3} cm^{-1}$. N: the number of observed lines arriving at the corresponding level. (Additional levels of the (111) state, obtained by Camy-Peyret *et al.* from flame spectra and corresponding to higher J values, can be found in ref. 4.) An additional level of the first decad, (060)[616] at 9400.6413 $cm^{-1} \pm 0.41 \times 10^{-3} cm^{-1}$, is known by seven lines.

TABLE 4. List of experimental assigned line positions and intensities of $H_2{}^{16}O$ at 300 K, between 8000 and 9500 cm^{-1}

SIGMA CM-1	V' V''	J'KA'KC'	J''KA''KC''	E'' CM-1	INTENSITY CM-2 ATM-1	%
8057.8620	130	4 1 3	5 2 3	448.910	6.4 E-06	10
8060.1324	130	9 0 9	10 1 10	1114.949	1.17E-05	6
8061.2986 P	130	9 1 9	10 0 10	1114.933	4.3 E-06	10
8073.4482 P	031	5 2 4	6 4 3	758.724	2.4 E-06	10
8073.9309 P	110	5 2 4	6 3 3	661.548	4.0 E-06	10
8082.8755	031	6 2 4	7 4 3	931.237	5.5 E-06	10
8084.4927	130	8 0 8	9 1 9	920.211	7.3 E-06	10
8085.8669	130	8 1 8	9 0 9	920.169	2.32E-05	6
8088.1942 P	031	12 0 12	13 0 13	1806.871	1.5 E-06	20
8091.8173 P	130	7 2 5	8 3 6	1006.116	4.9 E-06	10
8095.2249 P	031	5 0 5	6 2 4	602.773	2.7 E-06	10
8099.5985 P	130	9 0 9	9 1 8	1079.080	1.2 E-06	20
8098.3272	031	6 1 5	7 3 4	842.356	5.5 E-06	10
8100.3958 P	130	6 2 4	7 3 5	816.894	3.4 E-06	10
8107.8913 B	130	7 0 7	8 1 8	744.183	4.4 E-05	20
8107.8913 B	130	7 4 3	8 5 4	1255.186	4.4 E-05	20
8108.3108 P	130	8 1 7	9 2 8	1080.385	1.9 E-06	10
8108.8281	130	3 1 3	4 2 2	315.779	7.1 E-06	10
8109.8198	130	7 1 7	8 0 8	744.084	1.5 E-05	10
8111.4537	130	4 2 3	5 3 2	508.812	2.29E-05	6
8112.2240	031	11 1 11	12 1 12	1557.849	3.7 E-06	10
8112.8824	130	5 2 3	6 3 4	648.978	1.74E-05	6
8118.1438	130	7 1 6	8 2 7	885.800	1.75E-05	6
8118.5872 P	130	5 3 3	6 4 2	757.780	3.4 E-06	10
8120.4350 P	130	8 1 8	9 2 7	885.800	2.4 E-06	10
8121.8612	130	5 3 2	6 4 3	758.724	1.2 E-05	10
8124.0357	130	8 2 7	9 1 8	1079.080	8.0 E-06	10
8127.8182	130	6 1 5	7 2 6	709.808	7.7 E-06	10
8129.1274	130	4 2 2	5 3 3	503.968	9.9 E-06	10
8129.5008 P	130	6 0 6	7 1 7	586.479	2.3 E-05	10
8132.8441 P	031	3 2 2	4 4 1	488.107	3.1 E-06	10
8133.1524 P	130	6 1 6	7 0 7	588.243	7.24E-05	6
8134.1751 P	050	6 6 1	7 5 2	1059.835	4.3 E-06	10
8137.1955	130	5 1 4	6 2 5	552.911	3.82E-05	6
8137.8912	031	10 0 10	11 0 11	1327.109	1.0 E-05	10
8137.9660 P	031	10 1 10	11 1 11	1327.119	3.1 E-06	10
8140.5916	031	3 1 3	4 3 2	382.516	7.4 E-06	10
8143.4788	130	3 2 2	4 3 1	393.842	1.52E-05	6
8146.1894	130	4 3 2	5 4 1	610.340	2.16E-05	6
8147.0268	130	4 3 1	5 4 2	610.113	8.0 E-06	10
8147.6413 P	130	7 0 7	7 1 6	704.214	7.1 E-06	20
8147.6885 P	130	4 1 3	5 2 4	418.208	1.7 E-05	10
8148.0759	031	4 0 4	5 2 3	448.910	1.1 E-05	10
8149.8067 P	130	3 2 1	4 3 2	382.516	4.9 E-05	20
8149.8433 P	130	5 0 5	6 1 6	447.252	1.0 E-04	10
8151.9023	130	2 1 2	3 2 1	212.156	3.9 E-05	10
8155.2927	031	4 1 3	5 3 2	508.812	8.4 E-06	10
8156.0852	130	5 1 5	6 0 6	448.697	3.55E-05	6
8160.4064	130	3 1 2	4 2 3	300.362	6.4 E-05	10
8162.6765	031	9 0 9	10 0 10	1114.533	8.4 E-06	10
8162.9289	031	9 1 9	10 1 10	1114.549	2.3 E-05	10
8166.4940	130	6 1 6	6 2 5	552.911	1.2 E-05	10
8166.7927	130	6 2 5	7 1 6	704.214	2.38E-05	6
8168.0400	130	4 0 4	5 1 5	326.825	4.36E-05	6
8171.5331	130	2 2 1	3 3 0	285.418	8.71E-05	6
8172.5114 P	130	3 3 1	4 4 0	488.134	1.2 E-05	20
8172.5470 P	130	2 2 0	3 3 1	285.219	2.3 E-05	20
8172.8293	130	3 3 0	4 4 1	488.107	3.8 E-05	10
8173.0757	130	6 0 6	6 1 5	542.905	5.2 E-06	10
8175.9416	130	2 1 1	3 2 2	208.301	2.82E-05	6
8178.3026 P	031	3 1 2	4 3 1	383.842	2.5 E-06	10
8179.0233 P	130	4 1 4	5 0 5	325.347	1.36E-04	6
8184.7851	130	3 0 3	4 1 4	224.838	1.47E-04	6
8186.0386 P	130	6 5 2	7 6 1	1218.193	1.8 E-06	10
8186.5397 P	031	8 0 8	9 0 9	920.169	5.0 E-05	10
8186.5823 P	130	5 3 3	5 2 4	418.208	7.1 E-06	20
8187.0075	031	8 1 8	9 1 9	920.211	1.83E-05	6
8187.1298	130	1 1 1	2 2 0	136.183	2.34E-05	6
8187.3713 B	130	4 4 0	5 5 1	742.073	2.01E-05	6
8187.3713 B	130	4 4 1	5 5 0	742.076	2.01E-05	6
8192.1748	130	5 2 4	6 1 5	542.905	1.1 E-05	10
8194.4656	130	1 1 0	2 2 1	134.902	8.44E-05	6
8194.5955	031	3 0 3	4 2 2	318.779	8.2 E-06	10
8194.8304 P	031	9 1 8	10 1 9	1293.018	3.4 E-06	10
8195.4218 P	031	2 1 1	3 3 0	285.418	2.8 E-06	20
8196.9969 P	110	8 2 7	8 3 6	1006.116	3.1 E-06	20
8197.4381	130	5 0 5	5 1 4	399.497	3.51E-05	6
8200.9037	130	2 0 2	3 1 3	142.278	4.73E-05	6
8201.0510	031	9 2 8	10 2 9	1293.834	1.1 E-05	10
8202.5548	130	3 1 3	4 0 4	222.052	4.9 E-06	10
8202.7436	031	8 2 6	9 2 7	1201.921	1.4 E-06	10
8204.0087	130	4 1 4	4 2 3	300.362	3.28E-06	6
8208.1102	031	8 1 7	9 1 8	1079.080	2.68E-06	6
8208.3822	031	7 0 7	8 0 8	744.084	3.45E-06	6
8210.5528	031	7 1 7	8 1 8	744.183	1.06E-04	6
8212.1763 B *	130	5 5 1	6 6 0	1049.058	5.0 E-06	20
8212.1763 B	130	5 5 0	6 6 1	1049.087	5.0 E-06	20
8218.7298 P	031	8 3 5	9 3 6	1282.919	8.7 E-06	20
8217.8783 P	130	1 0 1	2 1 2	79.495	1.24E-04	6
8218.3059	130	3 1 3	3 2 2	208.30.	1.40E-06	6
8219.1889 P	130	4 0 4	4 1 3	275.497	2.09E-06	6
8219.2963	031	8 2 7	9 2 8	1080.385	9.4 E-06	10
8220.8081 P	130	4 2 3	5 1 4	399.497	3.45E-06	6
8221.1078 P	031	8 0 8	8 2 7	885.800	3.7 E-06	10
8221.3383	130	7 1 6	7 2 5	782.408	1.3 E-05	10
8222.0079 P	130	6 2 5	6 3 4	648.978	1.2 E-05	20
8222.0399 P	031	7 1 6	8 1 7	882.891	1.7 E-05	20
8227.2989	130	2 1 2	2 0 3	136.761	1.25E-04	6
8229.1574	130	2 1 2	2 2 1	134.902	3.87E-05	6
8230.2541	031	9 3 7	10 3 8	1446.175	5.0 E-06	10
8231.0006	031	8 0 8	7 0 7	586.243	1.8 E-04	10
8231.1108	130	5 2 4	5 3 3	503.988	6.9 E-06	10
8231.4920	031	2 0 2	3 2 1	212.158	2.0 E-05	10
8231.8639	031	6 2 4	7 2 5	782.408	2.99E-05	6
8233.1848	031	6 1 6	7 1 7	588.479	6.0 E-05	10
8234.4695 P	031	6 1 5	7 1 6	704.214	1.06E-04	6
8234.6540	130	6 1 5	6 2 4	602.773	9.4 E-06	10
8238.2379	130	3 0 3	3 1 2	173.365	1.07E-04	6
8238.8388	130	0 0 0	1 1 1	37.136	3.1 E-05	10
8237.7487	130	4 2 3	4 3 2	382.516	2.2 E-05	10
8237.8941 P	031	7 2 6	8 2 7	889.600	5.58E-05	6
8238.6605	130	6 3 4	7 2 5	782.408	5.31E-05	6
8242.1018 P	130	3 2 2	3 3 1	285.219	8.9 E-06	10
8243.5963	130	5 1 4	5 2 3	448.910	5.4 E-05	10
8243.8380 P	031	7 0 7	7 2 6	709.808	1.9 E-06	20
8244.1980 P	031	7 1 6	8 3 5	1050.157	8.4 E-06	10
8248.0790	130	2 1 1	2 2 0	136.183	1.9 E-05	10
8246.7046	130	3 2 1	3 3 0	285.418	2.01E-05	6
8248.0059	130	2 0 2	2 1 1	45.175	4.6 E-05	10
8248.1063 B	031	5 1 5	6 1 5	542.905	7.5 E-05	20
8248.1063 B	130	4 1 3	4 2 2	315.779	7.5 E-05	20
8248.6123	130	3 1 2	3 2 1	212.156	8.8 E-05	10
8249.2534	130	4 2 2	4 3 1	383.842	1.0 E-05	10
8249.4226	031	8 3 6	9 3 7	1218.232	5.0 E-06	10
8250.9017	031	7 1 7	7 1 6	704.214	7.5 E-06	10
8251.2992	031	5 0 5	6 0 6	448.697	9.87E-05	6
8251.8249	130	3 2 2	4 1 3	275.497	9.1 E-06	10
8252.8489	130	5 2 3	5 3 2	508.812	2.8 E-05	10
8253.2028	130	1 1 1	2 0 2	70.090	2.3 E-05	10
8253.0034	130	1 0 1	1 1 0	42.371	1.17E-04	6
8253.2306	031	5 1 5	6 1 6	447.252	2.81E-04	6
8253.5755 B	130	7 2 5	7 3 4	942.358	1.2 E-05	20
8255.8271	031	5 2 3	6 2 4	602.773	4.19E-06	6
8257.1833	031	6 2 5	7 2 6	709.808	3.53E-05	6
8257.3488	031	6 2 4	6 4 3	758.724	5.3 E-06	10
8261.3183 P	031	1 0 1	2 2 0	136.183	3.7 E-06	10
8264.3332 B	031	6 0 6	6 2 5	552.911	1.5 E-05	20
8264.3332 B	130	6 3 4	6 4 3	758.724	1.5 E-05	20
8264.8478	031	4 1 3	5 1 4	399.497	2.92E-04	6
8268.2453	130	5 1 5	5 4 1	610.340	6.9 E-06	10
8268.4235	130	4 3 2	4 4 1	488.107	6.6 E-06	10
8268.0106 P	130	4 3 1	4 4 0	488.134	3.1 E-06	10
8269.9328	031	7 3 5	8 3 6	1006.116	3.35E-05	6
8270.2391	031	4 0 4	5 0 5	325.347	3.96E-04	6
8273.5733	130	5 3 3	6 2 4	602.773	1.0 E-05	10
8274.9245	031	6 3 3	7 3 4	842.356	5.3 E-05	10
8276.7592 P	031	6 1 6	6 1 5	542.905	6.6 E-06	10
8278.8851	031	4 1 4	5 1 5	326.825	1.4 E-04	10
8277.2620	031	5 2 4	5 2 5	552.911	1.82E-04	6
8281.4515	031	8 4 4	9 4 5	1360.235	7.8 E-06	10
8281.7888	031	5 0 5	5 2 4	418.208	7.2 E-06	10
8283.1230 P	111	0 2 8	10 4 7	1591.338	3.4 E-06	20
8283.5861	130	2 2 1	3 1 2	173.365	1.5 E-05	10
8284.8475	031	3 1 2	4 1 3	275.497	1.48E-04	6
8288.3223	031	3 0 3	4 0 4	222.052	1.68E-04	6
8291.8500	031	6 3 4	7 3 5	816.894	2.27E-05	6
8295.2244	031	4 0 4	4 2 3	300.362	2.30E-05	6
8298.2712 P	031	3 1 3	4 1 4	224.838	4.68E-04	6
8298.4014 P	031	4 2 3	5 2 4	418.208	8.20E-05	6
8303.0249 B	130	7 4 3	7 5 2	1059.835	2.8 E-05	20
8303.0249 B	031	5 1 5	5 1 4	399.497	2.8 E-05	20
8304.0735	031	3 0 3	3 2 2	206.301	6.9 E-06	10
8308.4189 P	050	6 6 1	6 5 2	888.988	1.9 E-06	20
8308.5722 B	130	1 1 0	1 0 1	23.794	1.5 E-04	20
8308.5722 B	031	5 3 2	6 3 3	661.548	1.5 E-04	20
8308.0440	130	2 0 2	1 1 1	37.138	1.44E-05	6
8308.4890	130	4 2 2	5 1 5	328.829	7.2 E-06	10
8308.8870	031	2 0 2	3 0 3	136.761	5.87E-04	6
8307.2851 P	130	3 2 1	4 1 4	224.838	5.01E-05	6
8307.4742	031	2 1 1	3 1 2	173.365	4.68E-04	6
8308.7978	031	2 0 2	2 2 1	134.902	8.8 E-06	10
8310.0210 P	130	4 3 2	5 2 3	418.910	2.07E-05	6
8310.2185	031	3 2 1	4 2 2	315.779	9.84E-06	6
8311.7803 B	111	6 5 2	7 7 1	1394.813	5.4 E-06	20
8311.7803 B	111	6 5 1	7 7 0	1394.813	5.4 E-06	20
8312.1521	130	2 1 1	2 0 2	70.090	5.48E-06	6
8313.3886 P	031	7 4 3	8 4 4	1131.778	8.3 E-06	10
8314.4086 P	130	5 2 3	6 1 6	447.252	1.0 E-05	10
8315.0754	031	5 3 3	6 3 4	648.978	1.18E-04	6
8320.1852	031	2 1 2	3 1 3	142.278	1.87E-04	6
8320.5901	031	3 2 2	4 2 3	300.362	3.3 E-06	10
8320.6818 P	031	7 4 4	8 4 5	1122.700	1.9 E-05	10
8321.5554 P	111	8 0 8	9 2 7	1201.921	3.8 E-06	10
8323.2930	130	1 1 1	0 0 0	0.000	3.28E-05	6
8324.0089	130	3 1 2	3 0 3	136.761	1.32E-04	6
8325.0795	130	5 3 2	6 2 5	552.911	1.68E-06	6
8325.8858	130	3 1 2	2 2 1	134.902	8.2 E-06	10
8327.3944	031	1 0 1	2 0 2	70.090	1.93E-04	6
8327.9938	031	4 1 4	4 1 3	275.497	1.61E-06	6

TABLE 4 (*continued*)

SIGMA CM-1	V"	V'	J"KA"RC"	J'KA'RC'	E" CM-1	INTENSITY CM-2 ATM-1	Σ
8328.5732 P	210	7 1 6	8 4 5	1122.709	3.8 E-06	10	
8330.1072 P	130	3 0 3	2 1 2	79.495	7.28E-05	6	
8332.1918	C31	1 1 0	2 1 1	95.175	1.33E-04	6	
8335.2373	C31	4 3 1	5 3 2	508.812	1.54E-04	6	
8338.8679	031	2 2 0	3 2 1	212.158	2.86E-04	6	
8339.2740	031	4 3 2	5 3 3	503.988	5.44E-05	6	
8340.2841	130	2 1 2	1 0 1	23.794	1.19E-04	6	
8340.9327	130	4 3 1	5 2 4	416.208	6.9 E-06	10	
8341.1849	031	7 2 6	7 2 5	782.409	1.0 E-05	10	
8341.6888	031	1 1 1	2 1 2	79.495	3.94E-04	6	
8342.9108	031	6 4 2	7 4 3	931.237	4.02E-05	6	
8343.8640	031	2 2 1	3 2 2	208.301	9.60E-05	6	
8344.8708 P	130	3 3 1	4 2 2	315.779	3.8 E-06	10	
8345.8833 B	031	6 4 3	7 4 4	927.744	1.5 E-05	50	
8349.7438 P	031	3 1 3	3 1 2	173.365	7.58E-05	6	
8350.0583	031	0 0 0	1 0 1	23.794	3.31E-04	6	
8351.5910	210	7 3 5	7 6 2	1218.189	8.7 E-06	10	
8351.8579	050	6 6 1	7 3 4	842.358	5.7 E-06	10	
8352.3871	130	4 0 4	3 1 3	142.278	2.7 E-05	10	
8353.7871 P	130	7 2 5	8 1 8	744.183	2.2 E-06	10	
8354.9187	130	3 1 3	2 0 2	70.090	4.10E-05	6	
8358.1358 P	031	8 5 3	9 5 4	1477.297	2.8 E-06	10	
8357.5985 B	130	4 2 2	4 1 3	275.497	4.09E-05	6	
8357.5985 B	130	4 1 3	3 2 2	208.301	4.09E-05	6	
8358.7978	130	3 2 1	3 1 2	173.365	1.44E-04	6	
8360.3750	130	3 3 0	4 2 3	300.362	1.1 E-05	10	
8360.7824 P	111	7 3 5	8 5 4	1255.168	4.1 E-06	10	
8362.2035	130	5 2 3	5 1 4	399.457	6.8 E-05	10	
8362.5899	130	2 2 0	2 1 1	95.175	1.3 E-05	10	
8362.8057	031	3 3 0	4 3 1	387.842	5.19E-05	6	
8364.0120 B	031	6 2 5	6 2 4	602.773	1.55E-04	6	
8364.0120 B	031	3 3 1	4 3 2	382.518	1.55E-04	6	
8364.7593	130	5 1 4	5 0 5	325.347	5.0 E-05	10	
8368.3580	111	7 1 7	8 3 6	1008.116	9.5 E-06	10	
8367.2878	031	2 1 2	2 1 1	95.175	8.58E-05	6	
8367.8095	130	4 1 4	3 0 3	138.781	1.06E-04	6	
8369.2318	111	8 3 5	9 5 4	1477.297	6.9 E-06	10	
8370.3123	031	5 4 1	6 4 2	757.780	2.18E-05	6	
8371.2333	031	5 4 2	6 4 3	758.724	6.65E-05	6	
8372.0569	130	5 0 5	4 1 4	224.838	6.81E-05	6	
8374.1877	130	6 2 4	6 1 5	542.905	1.2 E-05	10	
8377.4554 P	130	2 2 1	2 1 2	79.495	5.12E-05	6	
8378.8136	031	1 1 1	1 1 0	42.371	4.75E-04	6	
8380.9371 B	111	7 2 6	8 4 5	1122.709	1.2 E-05	20	
8380.7385	130	5 1 5	4 0 4	222.052	2.8 E-05	10	
8383.8629	031	5 2 4	5 2 3	448.510	6.09E-05	6	
8385.0429 P	130	3 2 2	3 1 3	142.278	2.43E-05	6	
8385.3944	031	7 5 3	8 5 4	1255.168	1.50E-05	6	
8388.3981 P	111	7 3 4	8 5 3	1255.912	8.3 E-06	10	
8388.9267	111	8 1 7	9 3 6	1282.919	8.3 E-06	10	
8389.2940 P	210	9 0 9	8 5 4	1255.168	3.2 E-06	10	
8389.3545	130	6 0 6	5 1 5	328.825	1.8 E-05	10	
8389.7449	130	5 1 4	4 2 3	300.362	1.3 E-05	10	
8390.2311	031	1 1 0	1 1 1	37.128	1.84E-04	6	
8390.7310	130	6 1 5	6 0 6	448.697	9.8 E-06	20	
8393.7184 B	130	7 2 5	7 1 6	704.214	1.8 E-05	50	
8393.7184 B	210	8 3 6	9 4 5	1350.235	1.8 E-05	50	
8394.0579 P	130	6 1 6	5 0 5	325.347	5.31E-05	6	
8395.4275 P	130	4 2 3	4 1 4	224.838	6.44E-05	6	
8396.2620	031	4 4 0	5 4 1	610.340	6.80E-05	6	
8398.4773	031	4 4 1	5 4 2	610.113	2.47E-05	6	
8397.4854	031	1 0 1	0 0 0	0.000	1.28E-04	6	
8398.8310 P	031	4 2 3	4 2 2	315.779	4.99E-05	6	
8401.3437	031	2 1 1	2 1 2	79.495	2.23E-04	6	
8403.1281	031	4 2 2	5 0 5	325.347	1.4 E-05	10	
8403.9451	031	3 2 1	4 0 4	222.052	6.0 E-06	10	
8404.8017	130	7 0 7	8 1 8	447.252	3.18E-05	6	
8407.1868 B	130	7 1 7	6 0 6	448.697	1.1 E-05	50	
8408.4552	130	5 2 4	5 1 5	328.825	1.8 E-05	10	
8408.7940	031	3 2 2	3 2 1	212.158	3.8 E-04	10	
8410.2284 P	210	8 1 8	7 2 5	787.409	4.1 E-06	10	
8410.5648	031	6 5 2	7 5 3	1059.647	9.3 E-06	10	
8410.8202	031	6 5 1	7 5 2	1059.835	3.0 E-06	10	
8412.6866	031	6 3 3	7 1 6	704.214	1.0 E-05	10	
8413.8020	031	2 2 1	2 2 0	138.183	2.45E-04	6	
8414.2834	031	2 2 0	3 0 3	138.781	1.0 E-05	10	
8414.9801	130	2 2 1	1 1 0	42.371	1.38E-04	6	
8416.1225	031	2 2 0	2 2 1	134.902	7.47E-04	6	
8417.5081 B	130	7 1 6	7 0 7	588.243	1.8 E-05	50	
8417.6868 P	031	3 1 2	3 1 3	142.278	4.14E-04	6	
8418.2228	130	6 0 6	7 1 7	588.479	8.0 E-06	10	
8418.9729	111	6 2 5	9 4 5	1380.235	6.4 E-06	10	
8419.0968	031	3 2 1	3 2 2	208.301	1.2 E-04	10	
8419.7985 P	130	8 1 8	7 0 7	588.243	1.8 E-05	20	
8419.8641 P	031	2 0 2	1 0 1	23.794	6.5 E-04	10	
8420.0298 B	130	2 2 0	1 1 1	37.128	6.85E-05	6	
8420.0298 B	130	4 4 1	5 3 2	508.812	6.85E-05	6	
8421.2148 B	130	8 1 8	5 2 4	416.208	3.2 E-05	50	
8421.2148 B	031	9 3 7	8 5 4	1255.168	3.2 E-05	50	
8422.1873	111	6 1 6	7 3 5	818.894	6.0 E-06	10	
8422.3960	111	5 3 3	6 5 2	888.598	9.3 E-06	10	
8423.2060 P	111	6 2 5	7 4 4	927.744	9.0 E-06	20	
8423.7347	130	8 2 6	8 1 8	447.252	2.9 E-05	10	
8425.3258	031	2 1 2	1 1 1	37.128	1.30E-04	6	
8426.8258 P	210	5 0 5	6 3 4	648.878	2.3 E-06	20	

SIGMA CM-1	V"	V'	J"KA"RC"	J'KA'RC'	E" CM-1	INTENSITY CM-2 ATM-1	Σ
8428.1112	031	4 2 2	4 2 3	300.362	1.7 E-04	10	
8430.9190 P	130	9 0 9	8 1 8	744.183	1.8 E-06	10	
8431.1884 B	210	7 5 2	8 6 3	1411.812	4.4 E-06	10	
8431.1884 B	130	4 3 2	5 0 5	329.367	4.4 E-06	10	
8431.7872 P	130	9 1 9	8 0 8	744.084	2.9 E-06	20	
8432.0785	130	5 3 2	5 2 3	448.510	4.7 E-05	10	
8432.1451	130	3 2 2	2 1 1	95.175	3.8 E-05	10	
8433.6920	031	7 3 5	7 3 4	842.358	1.76E-05	6	
8434.8257 P	130	6 3 4	7 0 7	558.243	5.7 E-06	10	
8435.4683 B	031	5 5 0	6 5 1	888.832	4.10E-05	6	
8435.4683 B	031	5 5 1	6 5 2	888.958	4.10E-05	6	
8435.9971 P	210	7 3 5	8 4 4	1131.778	4.5 E-06	20	
8436.5997 B	111	14 1 14	15 1 15	2358.304	3.5 E-06	20	
8436.5997 B	111	14 0 14	15 0 15	2358.304	3.5 E-06	20	
8438.4681	031	2 1 1	1 1 0	42.371	4.7 E-04	10	
8439.2671	031	4 1 3	4 1 4	224.838	6.53E-05	6	
8439.7832 P	031	8 4 4	9 2 7	1201.921	4.1 E-06	10	
8440.2844	031	3 0 3	2 0 2	70.090	2.58E-04	6	
8441.1715 P	130	7 5 3	8 4 4	1131.778	3.5 E-06	20	
8441.3615	130	4 3 1	4 2 2	315.779	2.2 E-05	10	
8442.3920	031	5 2 3	5 2 4	416.208	2.0 E-05	10	
8443.8130 P	031	3 1 3	2 1 2	79.495	7.45E-04	6	
8448.9002	130	4 2 3	3 1 2	173.365	8.11E-05	6	
8446.9970	031	6 3 4	6 3 3	661.548	1.9 E-05	10	
8447.8019 P	111	7 1 6	8 3 5	1050.157	9.0 E-06	10	
8448.5810	130	3 3 0	3 2 1	212.158	5.88E-05	6	
8450.8352	130	7 1 6	6 2 5	552.911	9.0 E-06	10	
8451.5240 B	031	7 6 1	8 6 2	1411.812	7.4 E-06	20	
8451.5240 B	031	7 6 2	8 6 3	1411.812	7.4 E-06	20	
8452.4547	111	4 1 1	5 5 0	742.078	1.2 E-05	10	
8452.8268	130	3 2 1	2 1 2	79.495	2.1 E-05	10	
8454.3447	130	3 3 1	3 2 2	208.301	2.13E-05	6	
8455.2421	031	5 3 3	5 3 2	508.812	1.45E-04	6	
8455.9214	111	6 0 6	7 2 5	782.409	2.67E-05	6	
8456.1687	130	4 3 2	4 2 3	300.362	7.43E-05	6	
8458.8252 B	031	4 0 4	3 0 3	138.781	7.7 E-04	20	
8458.9481 B	130	8 2 7	8 1 8	744.183	8.0 E-06	50	
8459.3998	031	4 3 2	4 3 1	383.842	1.13E-04	6	
8459.5839	130	5 2 4	6 1 5	275.497	1.72E-05	6	
8460.1385 B	130	5 3 3	5 2 4	416.208	2.3 E-05	20	
8461.1098 P	031	3 3 1	3 3 0	285.418	7.0 E-04	10	
8461.2123 P	031	4 1 4	3 1 3	142.278	2.8 E-04	10	
8461.3178 P	111	5 2 4	6 4 3	758.724	3.9 E-05	10	
8461.4293 P	031	3 3 0	3 3 1	285.219	2.31E-04	6	
8461.5333 P	031	4 3 1	4 3 2	382.518	3.30E-04	6	
8462.2487 P	031	7 4 3	8 2 6	982.912	3.5 E-06	10	
8463.1294	031	5 3 2	5 3 3	503.988	5.29E-05	6	
8463.7838	210	6 2 5	7 5 4	842.358	1.8 E-05	10	
8464.2825	031	5 1 4	5 1 5	328.825	1.5 E-05	10	
8464.9685	031	3 1 2	2 1 1	95.175	2.01E-04	6	
8466.2720 B	111	13 1 13	14 1 14	2073.518	1.79E-05	6	
8466.2720 B	111	13 0 13	14 0 14	2073.518	1.79E-05	6	
8467.9027	031	6 3 3	6 3 4	648.978	6.40E-05	6	
8468.1588	130	6 3 4	6 2 5	552.911	6.0 E-05	10	
8468.7538	111	8 2 6	7 4 3	931.237	2.9 E-05	10	
8469.4039	060	6 1 6	7 4 3	931.237	1.80E-05	6	
8470.9974 P	130	6 5 2	7 4 3	931.237	6.4 E-06	10	
8471.5293	130	6 2 5	5 1 4	399.457	3.01E-05	6	
8474.0541	111	5 1 5	6 3 4	648.878	2.9 E-05	10	
8475.9430	031	5 0 5	4 0 4	222.052	2.2 E-04	10	
8478.3084 B	031	8 8 1	7 6 2	1218.189	1.3 E-05	20	
8478.3084 B	031	8 8 0	7 6 1	1218.193	1.3 E-05	20	
8477.6446 B	031	5 1 5	4 1 4	224.838	8.8 E-04	20	
8479.8745	031	2 2 1	2 0 2	70.090	5.4 E-06	10	
8484.1910 B	031	3 2 2	3 0 3	138.781	4.2 E-05	10	
8484.1910 B	111	12 2 10	13 2 11	2248.887	4.2 E-05	10	
8484.4863 P	031	8 2 6	9 0 9	920.169	3.5 E-06	10	
8488.0512	031	3 2 2	2 2 1	134.902	3.90E-04	6	
8489.8343	031	3 2 1	2 2 0	138.183	1.57E-04	6	
8489.8475 B	111	12 1 11	13 1 12	2042.311	1.4 E-06	20	
8489.8475 B	031	8 7 1	9 7 2	1810.588	1.4 E-06	20	
8489.8475 B	031	8 7 2	9 7 3	1810.584	1.4 E-06	20	
8490.0811	031	7 2 5	7 2 6	709.808	6.7 E-06	10	
8490.7291	031	4 1 3	3 1 2	173.365	8.0 E-04	10	
8490.8188 P	130	4 2 2	3 1 3	142.278	1.0 E-05	10	
8491.3205	111	12 2 11	13 2 12	2042.374	5.1 E-06	10	
8491.4314 B	031	6 1 5	6 1 6	447.252	2.1 E-05	50	
8491.4827 B	111	5 2 3	6 4 2	757.780	2.1 E-05	50	
8491.7354	031	5 4 2	7 2 5	782.408	6.4 E-06	10	
8491.8963	031	5 0 5	5 0 5	325.347	4.85E-04	6	
8492.5581 B	031	4 2 3	4 0 4	222.052	1.4 E-05	50	
8493.0383	031	6 1 6	5 1 5	328.825	1.74E-04	6	
8493.5299	031	8 3 5	8 3 6	1008.118	8.0 E-06	10	
8494.7836	111	12 1 12	13 1 13	1808.873	1.2 E-05	10	
8495.0894	111	12 0 12	13 0 13	1808.871	3.8 E-05	10	
8495.3170	111	4 2 3	5 4 2	810.113	1.5 E-05	10	
8496.6169	111	6 1 5	7 3 4	842.358	7.8 E-06	10	
8498.9017 P	130	8 2 7	7 1 6	704.214	7.6 E-06	10	
8500.5102 P	130	5 5 0	6 4 3	758.724	2.9 E-06	20	
8501.3061 B	111	11 4 8	12 4 9	2124.952	8.8 E-06	50	
8501.3828 B	111	11 5 7	12 5 8	2275.373	3.5 E-06	50	
8506.8258	031	5 2 4	5 0 5	325.347	3.24E-04	6	
8506.8878	111	10 4 6	11 4 7	1890.008	1.77E-05	6	
8508.7294	031	7 0 7	8 0 8	448.697	1.2 E-04	10	
8507.4068 P	111	11 2 9	12 2 10	1990.208	6.8 E-06	20	

TABLE 4 (*continued*)

SIGMA CM-1		V"	VIB	J"KA"KC"			J'KA'KC'			E" CM-1	INTENSITY CM-2 ATM-1	Σ
3507.4631	B		111	10	3	7	11	3	8	1813.223	3.6 E-04	20
3507.4631	B		031	7	1	7	6	1	6	447.252	3.6 E-04	20
3508.3039			031	4	2	3	3	2	2	206.301	1.68E-04	6
3508.8724			111	11	3	9	12	3	10	1987.508	1.5 E-05	10
3511.1781			111	4	2	2	5	4	1	610.340	5.8 E-05	10
3512.0191			210	5	2	4	6	3	3	661.548	1.3 E-05	10
3512.1529			031	7	4	4	7	4	3	931.237	3.5 E-05	10
3515.5120	P		031	5	1	4	4	1	3	279.497	1.52E-04	6
3515.8462			031	6	4	3	6	4	2	757.780	3.1 E-05	10
3516.3170			031	4	2	2	3	2	1	212.158	4.9 E-04	10
3516.8042			031	5	3	3	6	1	6	447.252	4.8 E-06	10
3517.4223	B	*	031	7	4	3	7	4	4	927.744	1.05E-04	6
3517.4223	B		031	6	4	2	6	4	3	756.724	1.05E-04	6
3517.6159	B	*	111	11	2	10	12	2	11	1774.751	2.3 E-04	20
3517.6159	B		031	5	4	2	5	4	1	610.340	2.3 E-04	20
3517.9782			031	5	4	1	5	4	2	610.113	7.41E-05	6
3518.3547	P		210	5	3	2	6	4	3	756.724	1.9 E-05	10
3518.4573	B	*	031	7	1	6	7	1	7	586.479	1.7 E-04	20
3518.4573	B		031	4	4	1	4	4	0	488.134	1.7 E-04	20
3518.4949	P		031	4	4	0	4	4	1	488.107	4.8 E-04	10
3518.9747	B		111	5	0	5	6	2	4	602.773	3.9 E-05	20
3518.9747	B		031	8	4	4	8	4	5	1122.709	3.9 E-05	20
3519.0684	P		031	8	2	6	8	2	7	885.800	9.1 E-08	10
3519.9813			111	11	1	10	12	1	11	1774.819	1.2 E-05	10
3520.0373	P		210	7	1	6	7	4	3	931.237	4.9 E-06	20
3520.4649			031	8	0	8	7	0	7	588.243	2.12E-04	6
3520.7380			031	8	1	8	7	1	7	586.479	7.10E-05	6
3521.1179	P		111	7	4	3	7	5	2	1218.189	1.2 E-05	10
3521.1833	P		111	4	1	4	5	3	3	503.968	2.4 E-05	10
3521.7210			111	10	5	5	11	5	6	1998.995	8.7 E-08	50
3523.5678	P		111	11	1	11	12	1	12	1557.849	1.2 E-04	10
3523.6006	B		111	11	0	11	12	0	12	1557.844	4.0 E-05	20
3523.9783	P		130	3	3	0	3	0	3	138.761	4.8 E-06	10
3524.4881	P		130	3	3	1	2	2	0	138.163	7.78E-05	6
3524.9904			210	10	4	7	11	3	8	1813.223	1.54E-05	6
3525.8356	P		130	3	3	0	2	2	1	134.902	1.1 E-04	10
3525.9128	P		111	3	2	2	4	4	1	488.107	3.8 E-05	10
3526.1610	P		050	7	6	1	7	3	4	842.358	1.2 E-05	20
3527.1568	P		210	10	3	8	11	2	9	1690.885	1.9 E-05	10
3527.2308	P		031	2	2	0	1	0	1	23.794	5.8 E-06	10
3528.1593			111	10	4	7	11	4	8	1843.030	7.4 E-06	10
3529.8115			031	5	2	4	4	2	3	300.362	4.48E-04	6
3530.4434	P		111	10	5	6	11	5	7	1985.787	4.5 E-06	10
3531.8888	P		031	7	3	5	8	1	8	744.183	4.2 E-06	10
3532.0402			111	3	2	1	4	4	0	488.134	1.3 E-05	10
3533.1463	B		031	9	0	9	8	0	8	744.064	6.2 E-05	10
3533.1463	B		210	4	1	4	5	2	3	446.510	6.2 E-05	10
3533.3185			031	9	1	9	8	1	8	744.183	1.2 E-04	10
3533.9548	B		111	10	3	8	11	3	9	1895.071	1.84E-05	6
3533.9548	B	1	121	5	2	3	5	4	2	2251.895	1.84E-05	6
3534.1248			111	10	2	8	11	2	9	1690.885	3.62E-05	6
3538.5400			111	9	3	6	10	3	7	1538.150	2.59E-05	6
3538.8225	P		130	5	2	3	4	1	4	224.838	1.3 E-05	10
3537.2147	P		210	10	1	10	10	2	9	1293.634	3.9 E-06	10
3537.3521			031	7	2	6	7	0	7	588.243	1.2 E-05	10
3539.2284	B		111	9	4	5	10	4	6	1618.452	3.40E-04	6
3539.2284	B		031	6	1	5	5	1	4	399.457	3.40E-04	6
3539.4360	P		111	5	1	4	6	3	3	661.548	5.00E-05	6
3542.2812			210	4	3	2	5	4	1	610.340	2.4 E-05	10
3542.4482	P		111	8	2	7	8	4	4	1131.778	5.2 E-08	10
3542.8212			031	5	2	3	4	2	2	315.779	1.5 E-04	10
3542.9468			111	10	2	9	11	2	10	1525.137	3.9 E-05	10
3543.5324			210	4	3	1	5	4	2	610.113	9.7 E-06	10
3544.0325	B		031	8	1	7	8	1	8	744.183	1.24E-04	6
3544.0325	B		111	10	1	9	11	1	10	1524.849	1.24E-04	6
3544.3744			130	3	3	2	3	2	1	212.158	4.9 E-05	10
3545.8323	P		031	10	0	10	9	0	9	920.169	5.9 E-05	10
3544.8748	P		031	10	1	10	9	1	9	920.211	2.1 E-05	20
3545.0348	P		050	8	0	8	8	3	6	648.978	2.3 E-05	10
3545.4903	P		031	10	2	8	11	0	11	1327.109	8.7 E-05	10
3546.8121			130	4	4	0	4	3	1	383.842	1.1 E-05	10
3548.9288	P		130	4	4	1	4	3	2	382.518	3.21E-05	6
3547.8857	P		111	12	4	8	13	6	7	2433.803	1.2 E-05	20
3550.9136	P		031	8	5	3	9	3	6	1282.919	3.3 E-05	10
3550.6827	B		031	6	2	5	5	2	4	416.208	1.2 E-04	20
3550.6939	B		111	10	1	10	11	1	11	1327.119	1.1 E-04	20
3550.8389			130	4	3	1	3	2	2	208.301	2.0 E-05	10
3551.5927			111	10	0	10	11	0	11	1327.109	2.2 E-04	10
3552.0058			210	8	3	6	9	2	7	1201.921	8.4 E-08	10
3552.3411			210	4	2	3	5	3	2	508.812	8.50E-05	6
3553.2398	P		130	5	3	2	5	0	5	325.347	8.8 E-08	10
3555.0075			111	9	2	7	10	2	8	1437.889	5.30E-05	6
3555.1509			111	9	5	4	10	5	5	1724.707	9.7 E-08	10
3555.9063	B		031	11	1	11	10	1	10	1114.549	7.5 E-05	50
3555.9063	B		111	9	4	6	10	4	7	1581.338	7.5 E-05	50
3555.8889	P		210	5	2	3	6	3	4	648.978	3.2 E-06	10
3556.1122			111	7	3	5	7	5	2	1058.835	9.1 E-06	10
3557.0662			130	10	3	8	11	0	11	1327.109	3.2 E-05	10
3557.1490		1	121	7	1	7	8	1	8	2337.889	3.9 E-06	10
3557.7901			031	7	4	4	8	2	7	885.800	6.8 E-06	10
3558.0228			031	4	3	2	3	3	1	288.218	8.18E-05	6
3558.6315			031	4	3	1	3	3	0	289.418	2.39E-04	6
3558.9528			111	9	3	7	10	3	8	1448.128	1.44E-04	6
3559.5552			111	9	5	5	10	5	6	1718.718	2.9 E-05	10
3561.8313			031	9	3	7	10	1	10	1114.549	2.8 E-06	10
3562.0252			031	7	1	6	8	1	5	542.905	7.3 E-05	10
3563.1484	P		111	3	1	3	4	3	2	382.518	9.2 E-05	10
3563.6105			111	8	3	5	9	3	6	1282.919	2.34E-04	6
3564.5968			031	5	3	3	5	1	4	339.457	2.08E-05	6
3565.3780	B		210	9	0	9	9	1	8	1079.080	5.8 E-08	50
3565.3780	B		111	9	6	3	10	6	4	1875.464	5.8 E-06	50
3565.8408	B		031	6	3	4	6	1	5	542.905	7.5 E-06	50
3565.7588	P		031	12	0	12	11	0	11	1327.109	1.50E-05	6
3566.2044			111	9	6	4	10	6	5	1874.973	1.0 E-05	10
3567.5633			031	6	2	4	5	2	3	448.510	2.55E-04	6
3568.0041	P	1	121	6	4	2	7	4	3	2572.140	4.3 E-06	10
3568.0115			111	9	1	8	10	1	9	1093.019	1.1 E-04	10
3568.9198			111	5	3	3	5	5	0	742.078	8.8 E-08	10
3569.8334			210	3	3	1	4	4	0	488.134	1.3 E-05	10
3569.8159			210	3	3	0	4	4	1	188.107	3.8 E-05	10
3570.8833			031	7	2	6	6	2	5	552.911	2.2 E-04	10
3570.8247	P		111	9	2	8	10	2	9	1293.634	2.6 E-04	10
3570.9042	P		111	4	1	3	5	3	2	508.812	1.8 E-04	10
3571.8342			031	7	3	5	7	1	6	704.214	1.23E-05	6
3572.0088	P		111	7	2	6	7	4	3	931.237	9.8 E-08	10
3572.6570			111	8	4	4	9	4	5	1360.235	1.68E-04	6
3573.1618			031	3	3	1	3	1	2	173.385	6.8 E-08	10
3573.3892	P		210	4	2	2	5	3	3	503.968	1.72E-05	6
3574.4888	P	1	121	5	2	3	6	2	4	2211.192	3.0 E-08	20
3574.5137	P		031	9	2	8	9	0	9	920.169	8.1 E-08	20
3574.5595	P		130	5	3	4	5	2	3	448.510	3.3 E-05	10
3575.0471	P		031	5	4	2	5	2	5	552.911	5.8 E-06	10
3575.8248			111	4	0	4	5	2	3	448.510	2.04E-04	6
3576.5073			111	6	3	3	5	5	2	588.598	3.2 E-05	10
3577.2859			111	8	2	6	9	2	7	1201.921	3.98E-04	6
3577.8806			111	9	0	9	10	0	10	1114.533	3.28E-04	6
3578.0551	B		111	9	1	9	10	1	10	1114.549	7.8 E-04	20
3578.2680	B		031	8	4	3	8	5	4	1255.166	1.9 E-05	20
3578.8108			031	7	5	2	7	5	3	1059.647	1.56E-05	6
3578.9873	P		031	10	2	8	10	2	9	1293.634	7.5 E-08	20
3580.8857			031	7	5	3	7	5	2	1059.835	3.97E-05	6
3581.0432	P		210	7	1	7	8	0	8	744.064	2.3 E-08	20
3581.2737	P		210	7	0	7	8	1	8	744.163	7.6 E-06	10
3581.5372	P		031	5	3	3	4	3	2	382.518	2.9 E-04	10
3581.5787	P		031	6	5	2	6	5	1	688.632	3.7 E-05	20
3581.9890	P		031	5	5	1	5	5	0	742.078	2.5 E-04	10
3582.0406	B		031	6	5	1	6	5	2	888.598	9.7 E-05	50
3582.0406	B		031	5	5	0	5	5	1	742.073	9.7 E-05	50
3583.2984	P		111	8	4	5	9	4	6	1340.885	5.2 E-05	20
3583.9757			031	8	1	7	7	1	6	704.214	1.2 E-04	10
3584.1886			111	8	3	6	7	3	7	1218.232	1.32E-04	6
3584.5901	P		012	9	3	7	10	4	6	1618.452	7.1 E-08	10
3584.7199	P		210	3	1	3	4	2	2	315.779	1.7 E-05	10
3584.7932	P		111	10	1	10	10	1	9	1293.019	6.8 E-08	10
3584.8602	P		210	7	3	5	8	2	6	982.912	2.7 E-05	10
3585.1690			111	10	0	10	10	2	9	1293.634	1.2 E-05	10
3585.3836	P		012	9	2	7	9	3	6	1282.919	5.2 E-06	20
3586.9171			210	3	2	2	4	3	1	383.842	4.7 E-05	10
3588.9449			111	8	5	3	9	5	4	1477.297	8.08E-05	6
3588.2999			031	7	5	2	8	3	5	1050.157	8.28E-05	6
3588.8987			111	9	5	4	9	5	5	1474.981	2.78E-05	6
3589.5726	P		111	9	7	3	10	7	4	2054.347	4.2 E-06	10
3590.0379			130	7	5	3	8	2	6	932.912	7.3 E-05	10
3590.1717			031	6	2	7	7	2	6	709.608	4.2 E-05	10
3590.9057	P		210	9	1	8	8	2	7	985.800	8.5 E-06	10
3592.3877			111	8	1	7	9	1	8	1079.080	8.1 E-04	10
3593.1876			111	6	2	5	6	4	2	757.780	6.5 E-06	10
3593.4677	P		210	8	0	8	9	1	7	982.891	8.5 E-06	10
3593.8358	P		111	8	2	7	9	2	8	1080.385	2.88E-04	6
3594.0327			210	3	2	1	4	3	2	382.518	5.50E-05	6
3594.1915			111	7	3	4	8	3	5	1050.157	1.60E-04	6
3595.6440			111	8	6	2	9	6	3	1631.384	2.3 E-09	10
3595.8324	P		111	3	1	2	4	3	1	383.842	4.2 E-05	10
3595.9002	P		111	8	0	8	9	0	9	1631.251	8.5 E-08	10
3596.0958			031	7	2	5	6	2	4	602.773	4.9 E-05	10
3597.2998			031	9	3	7	9	1	8	1079.080	8.5 E-06	10
3598.8845	B		012	9	5	4	10	6	5	1874.973	3.8 E-08	20
3599.9885			111	2	1	2	3	3	1	285.219	2.99E-05	6
3601.2481			210	5	1	4	6	2	5	552.911	4.18E-05	6
3601.2872			111	7	2	5	8	2	6	982.912	2.7 E-04	10
3603.3097	P		111	8	0	8	9	0	9	920.169	1.8 E-03	10
3603.3098	P		111	8	1	8	9	1	9	920.211	8.1 E-04	10
3604.0272		1	121	5	1	5	6	1	6	2042.794	1.0 E-05	10
3604.5773	P		031	6	3	4	5	3	3	503.968	7.08E-05	6
3604.9583			031	9	1	8	8	1	7	882.891	2.12E-05	6
3605.1849	P		210	6	0	6	7	1	7	586.479	4.2 E-06	20
3605.5340			111	7	4	3	8	4	4	1131.778	1.4 E-04	10
3608.4007			210	6	1	6	7	0	7	588.243	8.2 E-08	10
3608.8108		1	121	4	1	3	5	1	4	2000.885	1.1 E-05	10
3607.7008			111	5	2	4	5	4	1	610.340	2.1 E-05	10
3608.0898			031	6	1	3	5	3	2	508.812	2.28E-04	6
3608.0885			031	9	2	8	8	2	7	885.800	8.60E-05	6
3608.8314			111	7	3	5	8	3	6	1008.118	8.8 E-04	10
3611.3819	P		111	7	4	4	8	4	5	1122.709	4.19E-04	6
3611.8285			111	9	0	9	9	2	8	1080.385	1.6 E-05	10
3612.8581	B		210	9	1	8	9	2	7	1201.921	4.5 E-08	20
3613.5255			111	9	1	9	9	1	8	1079.080	4.1 E-05	10
3614.2202			111	5	1	5	5	3	2	508.812	3.0 E-05	10
3614.4183			210	2	2	1	3	3	0	285.418	1.71E-04	6
3615.0899			111	7	1	6	8	1	7	882.891	5.9 E-04	10

TABLE 4 (*continued*)

SIGMA CM-1	V"	V'B	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
7615.8379 B		111	8 7 2	9 7 3	1810.584	1.1 E-05	20
8615.8379 B		111	8 7 1	9 7 2	1810.588	1.1 E-05	20
8618.8185		210	4 1 3	5 2 4	416.208	2.4 E-05	10
8617.2958 P		111	4 2 3	4 4 0	488.134	4.9 E-08	10
8617.3744 P		111	7 5 2	8 5 3	1255.812	5.8 E-05	10
8617.4771 P		210	2 2 0	3 3 1	289.219	2.4 E-05	10
8617.5813 P		111	6 2 4	7 2 5	782.409	7.2 E-04	10
8617.6460 P		111	7 2 6	8 2 7	885.600	1.7 E-03	10
8618.0587 B •		111	2 1 1	3 3 0	285.418	1.70E-04	6
8618.0587 B		111	7 5 3	8 5 4	1255.168	1.70E-04	6
8618.2309		060	6 1 6	7 2 5	782.409	5.30E-04	6
8618.7422 P	1	121	4 3 2	5 3 3	2128.407	1.7 E-06	20
8619.2129		031	4 3 1	4 1 4	224.838	5.5 E-06	10
8619.8247 P		130	6 5 2	7 2 5	782.409	6.14E-04	6
8621.2248		210	7 0 7	7 1 6	704.214	1.5 E-05	10
8622.2559		031	8 2 6	7 2 5	782.409	7.9 E-05	10
8622.7502		111	6 3 3	7 3 4	842.358	1.5 E-03	10
8623.0374 B		012	7 6 1	8 7 2	1590.890	8.8 E-06	20
8623.0374 B		012	7 6 2	8 7 1	1590.890	8.8 E-06	20
8623.0374 B		012	8 5 4	9 6 3	1631.384	8.8 E-06	20
8623.9540 P		012	8 5 3	9 6 4	1631.251	2.8 E-06	10
8624.1841 B	1	121	4 0 4	5 0 5	1920.789	1.5 E-04	20
8624.1841 B		111	3 0 3	4 2 2	315.779	1.5 E-04	20
8625.4630 B		111	7 5 1	8 6 2	1411.646	1.5 E-05	20
8625.5191 B		111	7 6 2	8 6 3	1411.612	4.6 E-05	20
8626.5709 P	1	121	4 1 4	5 1 5	1922.830	5.2 E-06	20
8627.0702 P		031	7 3 5	6 3 4	648.978	1.37E-04	6
8628.1416		111	7 0 7	8 0 8	744.064	1.2 E-03	10
8628.3111 B		111	7 1 7	8 1 8	744.183	3.8 E-03	10
8628.3114 B •		031	6 5 1	7 3 4	842.358	3.8 E-03	10
8628.5928 B	1	121	3 1 2	4 1 3	1875.473	9.3 E-06	50
8630.1144 P		111	10 2 9	10 2 8	1437.989	5.2 E-06	20
8630.4807		210	5 1 5	6 0 6	448.897	6.5 E-06	10
8630.8538		210	5 2 4	6 1 5	542.905	7.5 E-06	10
8631.8451		210	6 3 4	7 2 5	782.409	6.84E-04	6
8632.8041 P	1	121	3 2 1	4 2 2	1922.901	4.9 E-05	20
8632.8432 B		210	3 1 2	4 2 3	300.382	1.0 E-04	10
8632.8432 B		031	7 3 4	6 3 3	661.548	1.0 E-04	10
8633.4115		111	4 2 2	3 4 1	488.107	1.93E-05	6
8634.4055		031	7 5 3	8 3 6	1006.116	1.0 E-05	10
8635.1358 P		012	8 3 6	9 4 5	1380.235	4.6 E-06	20
8636.0383		111	6 3 4	7 3 5	818.894	6.1 E-04	10
8636.4830 B		210	10 3 8	10 4 7	1581.336	6.2 E-08	20
8636.7581		111	6 1 5	7 1 6	704.214	3.7 E-03	10
8636.9721		111	6 4 2	7 4 3	931.237	8.3 E-04	10
8637.8778		111	8 0 8	8 2 7	885.600	1.08E-04	6
8639.1274 P		111	5 2 3	5 4 2	610.113	1.1 E-05	10
8639.5883		111	6 4 3	7 4 4	927.744	2.8 E-04	10
8639.7290 B		210	6 1 6	6 2 5	552.911	3.0 E-05	50
8639.8502		031	5 4 2	4 4 1	488.107	1.30E-04	6
8639.9579		031	5 4 1	4 4 0	488.134	4.3 E-05	10
8640.7199		111	8 1 8	8 1 7	882.891	3.95E-05	6
8641.3613		111	6 2 5	7 2 6	709.808	1.1 E-03	10
8641.6053 B		111	7 7 0	8 7 1	1590.890	1.8 E-05	20
8641.6053 B		111	7 7 1	8 7 2	1590.890	1.8 E-05	20
8641.9255	1	121	3 2 2	4 2 3	1908.017	1.2 E-05	10
8643.2884		111	6 2 4	6 4 3	758.724	8.9 E-06	10
8643.9179 B		060	6 1 6	6 4 3	758.724	6.2 E-06	20
8644.0273		130	4 4 1	3 3 0	285.418	6.98E-05	6
8644.2343 B		130	4 4 0	3 3 1	785.219	2.6 E-05	20
8644.7678 P	1	121	3 0 3	4 0 4	1817.450	6.2 E-06	10
8645.2226 B •		130	7 5 3	7 4 4	927.744	1.9 E-05	50
8645.2226 B	1	121	3 3 1	4 3 2	2004.818	1.9 E-05	50
8645.3976		111	9 1 8	9 3 7	1218.232	1.3 E-05	10
8645.5092 P		130	6 5 2	6 4 3	758.724	4.12E-05	6
8646.0348 P		031	8 6 2	8 6 3	1411.812	1.7 E-05	10
8646.4695		111	5 2 3	6 2 4	602.773	1.5 E-03	10
8646.7717 P		111	6 5 1	7 5 2	1059.835	3.02E-04	6
8646.8802 P		130	5 5 0	5 4 1	610.340	2.2 E-05	20
8646.9514 B •		031	7 6 2	7 6 1	1218.193	1.5 E-04	20
8646.9514 B		111	6 5 2	7 5 3	1059.847	1.5 E-04	20
8646.9514 B •		031	7 6 1	7 6 2	1218.189	1.5 E-04	20
8647.1057 P		130	5 5 1	5 4 2	610.113	9.5 E-06	20
8647.4431 B		031	6 6 1	6 6 0	1045.098	1.5 E-04	20
8647.4431 B		031	6 6 0	6 6 1	1045.067	1.5 E-04	20
8648.7508 B	1	121	3 1 3	4 1 4	1821.598	2.7 E-05	20
8648.7508 B		210	6 0 6	6 1 5	542.905	2.7 E-05	20
8648.9573		031	8 3 6	7 3 5	818.894	2.9 E-05	10
8649.2715 B		012	7 5 3	8 6 2	1411.648	5.6 E-06	50
8649.2715 B		050	6 6 0	6 1 5	542.905	9.8 E-06	50
8649.5095		012	7 5 2	8 6 3	1411.612	1.7 E-05	10
8649.8772		210	4 0 4	5 1 5	328.625	2.3 E-05	10
8650.1898		012	7 2 6	8 3 5	1059.197	1.4 E-06	10
8650.4789		210	2 1 1	3 2 2	206.301	2.9 E-05	10
8650.8621 P		130	7 2 5	8 1 8	447.252	2.3 E-05	10
8651.0948		012	8 1 8	7 2 5	782.409	3.4 E-05	10
8652.0875		111	8 0 8	7 0 7	588.243	6.7 E-03	10
8652.4028		111	8 1 8	7 1 7	588.479	2.3 E-03	10
8654.3089 B •		130	5 3 3	4 0 4	222.082	2.9 E-05	10
8654.3898 B		210	4 1 4	5 0 5	329.347	2.9 E-05	10
8654.4659 P		130	5 5 1	6 2 4	602.773	6.2 E-06	10
8654.8240 P		111	5 3 2	6 3 3	661.548	9.86E-06	6
8654.9700 B		111	8 6 1	7 6 2	1218.189	8.2 E-06	20
8654.9700 B		111	8 6 0	7 6 1	1218.193	8.2 E-06	20
8656.2726	1	121	2 1 1	3 1 2	1772.413	1.8 E-05	10

SIGMA CM-1	V"	V'B	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
8656.4993		111	8 2 6	8 4 5	1122.709	2.1 E-05	10
8657.1444 B		111	7 2 5	7 4 4	927.744	2.78E-05	6
8657.1444 B		210	6 2 5	6 3 4	648.978	2.78E-05	6
8657.2900		031	8 3 5	7 3 4	842.358	8.99E-05	6
8657.5298 P		210	6 3 4	6 4 3	758.724	5.8 E-06	10
8658.0794		111	5 1 4	6 1 5	542.905	2.2 E-03	10
8660.2447		111	3 1 3	3 3 0	285.418	4.18E-05	6
8660.9728 B		031	7 4 4	7 2 5	782.408	2.2 E-05	20
8660.9728 B		210	5 1 5	5 2 4	416.208	2.2 E-05	20
8661.6859		210	4 2 3	5 1 4	399.457	1.5 E-04	10
8662.0172 P		111	5 3 3	6 3 4	648.978	2.9 E-03	10
8662.5973 P		111	7 0 7	7 2 6	709.808	8.3 E-05	10
8663.1525 P		111	2 0 2	3 2 1	212.158	5.58E-04	6
8663.4776 P		210	1 1 1	2 2 0	136.163	3.7 E-05	20
8663.5128 P		031	6 4 3	5 4 2	610.113	4.7 E-05	20
8663.8065		031	6 4 2	5 4 1	610.340	1.32E-04	6
8665.1311		111	5 2 4	6 2 5	552.911	5.7 E-03	10
8665.3293 P		111	8 1 7	8 3 6	1008.118	1.0 E-04	10
8665.8690 P		210	6 3 3	6 4 2	757.780	1.3 E-05	10
8666.7646		111	5 4 1	6 4 2	757.780	4.37E-04	6
8667.2125 P		012	5 0 5	6 3 4	648.978	2.8 E-04	10
8667.8458		111	5 4 2	6 4 3	758.724	1.3 E-03	10
8668.2805		111	7 1 7	7 1 6	704.214	2.5 E-04	10
8668.9228		210	5 3 3	6 2 1	602.773	1.4 E-04	10
8669.1983		210	3 0 3	4 1 4	224.838	1.1 E-04	10
8669.5990 B		210	5 2 4	5 3 3	503.988	1.2 E-05	20
8670.2581 B		210	1 1 0	2 2 1	134.902	1.5 E-04	20
8670.2581 B •		031	9 3 7	8 3 6	1008.118	1.5 E-04	20
8670.6790 B		031	10 2 8	9 2 7	1201.921	1.4 E-05	20
8670.6790 B		031	4 3 1	3 1 2	173.385	1.4 E-05	20
8670.8790 B	1	121	2 1 2	3 1 3	1739.484	1.4 E-05	20
8673.8502		012	7 4 3	8 5 4	1255.168	1.43E-05	6
8675.0092 P		111	4 2 2	5 2 3	448.510	7.0 E-03	20
8675.0485 P		111	5 0 5	6 0 6	448.897	3.3 E-03	20
8675.3819 B		111	5 5 0	6 5 1	888.832	4.8 E-04	20
8675.3973 B		111	5 5 1	6 5 2	888.598	6.0 E-04	20
8675.7803		111	5 1 5	6 1 6	447.252	1.1 E-02	10
8676.1670		210	5 0 5	5 1 4	399.457	6.37E-05	6
8676.0361		012	7 3 5	8 4 4	1131.778	5.9 E-06	10
8676.4480		210	3 1 3	4 0 4	222.092	1.3 E-05	10
8676.8366		210	4 2 3	4 3 2	382.518	4.0 E-05	10
8679.2964		210	4 1 4	4 2 3	300.382	5.74E-05	6
8680.2591		111	4 1 3	5 1 4	399.457	1.0 E-02	10
8681.2656		111	7 1 6	7 3 5	818.894	8.1 E-05	10
8681.9480 P	1	121	1 1 0	2 1 1	1693.852	5.9 E-06	10
8682.2527 P		130	10 3 8	9 2 7	1201.921	3.0 E-06	10
8684.5382		210	3 2 2	3 3 1	285.219	1.2 E-05	10
8685.2032		050	8 8 1	5 3 2	508.812	1.2 E-05	10
8685.4199 P		111	6 0 6	6 2 5	552.911	4.87E-04	6
8685.7190		111	4 3 1	5 3 2	508.812	4.4 E-03	10
8686.9727 B		130	6 4 3	5 3 2	508.812	2.4 E-05	50
8686.8852		031	7 4 4	6 4 3	758.724	9.1 E-05	10
8687.0245	1	121	1 0 1	2 0 2	1884.970	8.2 E-06	10
8687.2511		210	2 0 2	3 1 3	142.278	5.1 E-05	10
8687.3834 B		031	7 4 3	6 1 2	757.780	3.4 E-05	20
8689.1555 P		111	4 3 2	5 3 3	503.988	1.5 E-03	10
8689.2229 P		111	4 2 3	5 2 4	416.208	3.0 E-03	10
8691.3098		111	8 2 7	8 2 6	982.812	3.7 E-05	10
8691.9937		111	6 1 5	6 3 4	648.978	2.57E-04	6
8692.8552	1	121	1 1 1	2 1 2	1877.062	1.7 E-05	10
8693.5152		210	4 2 2	4 3 1	383.842	5.8 E-06	10
8694.0678		111	1 0 1	2 2 0	136.163	1.1 E-04	10
8694.1874 P		210	3 1 3	3 2 2	208.301	2.3 E-05	20
8694.2627 P		210	3 2 2	4 1 3	275.497	2.9 E-04	10
8694.4552 P		111	3 1 2	3 3 1	285.219	2.48E-05	6
8695.1818		111	4 4 0	5 4 1	610.340	1.43E-03	6
8695.3895		111	4 4 1	5 4 2	610.113	4.78E-04	6
8695.8388		210	5 2 3	5 3 2	508.812	1.9 E-05	10
8696.9783 P		111	6 1 5	6 1 5	542.908	1.8 E-04	10
8696.4737		012	6 4 3	7 5 2	1059.835	2.7 E-05	10
8696.9877		111	4 0 4	5 0 5	329.347	1.5 E-02	10
8697.1995 P		111	4 1 3	4 3 2	382.518	2.1 E-04	10
8697.9049 B		012	6 4 2	7 5 3	1059.847	9.8 E-06	50
8697.9049 B •	1	121	3 1 3	3 1 2	1772.413	9.8 E-06	50
8698.5219		111	4 1 4	5 1 5	328.625	9.1 E-03	10
8700.1411 B		012	5 5 1	6 6 0	1045.088	1.55E-05	6
8700.1411 B		012	5 5 0	6 6 1	1045.067	1.55E-05	6
8700.8020 B		210	4 0 4	4 1 3	275.497	6.5 E-05	50
8703.0132		012	6 2 5	7 3 4	842.358	3.0 E-05	10
8703.5140		210	2 1 2	3 0 3	138.761	3.0 E-05	10
8704.1781 P		111	3 1 2	4 1 3	275.497	4.8 E-03	10
8704.3951 P		111	3 2 1	4 2 2	315.779	3.9 E-03	10
8705.1632		210	1 0 1	2 1 2	79.495	1.5 E-04	10
8706.3744 P		210	2 1 2	2 2 1	134.902	5.1 E-05	10
8708.0370 P		111	5 0 5	5 2 4	416.208	2.86E-04	6
8708.0819		210	4 3 2	5 2 3	448.510	2.8 E-04	10
8709.3383 B		031	4 4 0	4 2 3	300.382	5.3 E-05	20
8709.6484 P		210	5 1 4	5 2 3	448.510	8.44E-05	6
8709.8507 B		031	8 7 1	8 7 2	1590.890	2.2 E-05	20
8709.8507 B		031	8 7 2	8 7 1	1590.890	2.2 E-05	20
8710.1729	1	121	0 0 0	1 0 1	1618.889	1.40E-05	6
8710.4497		031	8 4 4	7 4 3	931.237	9.3 E-05	50
8710.4923 B		031	7 7 1	7 7 0	1396.813	8.1 E-05	10
8710.4923 B		031	7 7 0	7 7 1	1396.813	8.1 E-05	10
8712.1886 P		012	4 0 4	5 3 3	503.988	9.9 E-05	20

TABLE 4 (*continued*)

SIGMA CM-1		v'' V1D	J''KA''KC''	J''KA''KC''	E'' CM-1	INTENSITY CM-2 ATM-1	%
8713.6592		111	3 2 2	4 2 3	300.382	1.0 E-02	10
8713.8988	P	130	7 4 3	6 3 4	648.978	1.3 E-05	20
8714.0093	R	012	8 3 4	7 4 3	931.237	3.0 E-05	10
8714.0093	R	111	10 4 6	11 2 9	1690.665	3.0 E-05	10
8714.3119	P	012	5 1 5	6 2 4	602.773	7.8 E-06	10
8714.7684		111	3 3 0	4 3 1	383.842	1.5 E-03	10
8715.8813	R	111	3 3 1	4 3 2	382.518	4.5 E-03	50
8717.2475		210	4 1 3	4 2 2	319.779	3.44E-05	6
8717.9110		111	3 0 3	4 0 4	222.052	6.5 E-03	10
8720.1000	P	210	7 5 2	8 4 5	1122.708	2.2 E-05	50
8720.6148	P	210	2 1 1	2 2 0	138.163	2.8 E-05	20
8720.6685	P	210	3 0 3	3 1 2	173.365	1.8 E-04	10
8720.8251	R	111	7 2 6	7 2 5	782.408	1.9 E-02	20
8720.8251	R	111	3 1 3	4 1 4	224.838	1.9 E-02	20
8721.0492	P	210	3 1 2	3 2 1	212.156	1.1 E-04	10
8721.9733	P	111	4 0 4	4 2 3	300.382	1.09E-03	6
8722.1884		111	9 3 7	9 3 6	1282.919	1.4 E-04	10
8722.9047		012	5 4 2	6 5 1	888.832	1.3 E-05	10
8723.0289		111	6 3 3	5 5 0	742.076	8.8 E-06	10
8723.2103		012	5 4 1	6 5 2	888.598	3.92E-05	6
8723.5752		111	5 1 5	5 1 4	398.457	1.03E-03	6
8724.4451		210	0 0 0	1 1 1	37.138	4.1 E-05	10
8726.4711		210	2 2 1	3 1 2	173.365	6.2 E-03	10
8727.2448	P	111	11 4 8	11 4 7	1699.008	3.9 E-06	20
8727.3506	P	111	7 3 5	6 5 2	888.598	1.6 E-06	20
8728.1404		031	6 5 2	5 5 1	742.073	2.63E-05	6
8728.5793	R	031	6 5 1	5 5 0	742.076	4.5 E-05	20
8729.2107		121	1 1 1	1 1 0	1640.908	2.00E-05	6
8729.5492		210	1 1 1	2 0 2	70.090	8.3 E-06	10
8730.1318		111	2 1 1	3 1 2	173.365	1.1 E-02	10
8733.6621	P	111	3 0 3	3 2 2	208.301	3.8 E-04	10
8733.8083		111	2 2 0	3 2 1	212.156	8.9 E-03	10
8734.3537		210	2 0 2	2 1 1	95.175	6.71E-05	6
8738.8359		121	2 2 1	2 2 0	1743.492	8.9 E-06	10
8737.4361	P	210	4 3 1	5 2 4	416.208	5.0 E-05	10
8738.2489	P	121	3 2 1	4 0 4	1817.450	5.8 E-05	20
8738.3315	P	111	2 2 1	3 2 2	208.301	2.8 E-03	20
8738.5470	P	111	2 0 2	3 0 3	138.761	2.2 E-02	10
8739.2476	R	121	4 3 2	4 3 1	2006.917	2.5 E-05	20
8739.2476	R	121	2 2 0	2 2 1	1742.308	2.5 E-05	20
8740.4073	P	111	7 0 2	2 2 1	134.902	4.97E-04	6
8741.2896	P	012	9 2 7	10 3 8	1446.128	6.9 E-06	20
8741.3330	P	121	4 3 1	4 3 2	2006.818	1.0 E-05	20
8741.7538	P	121	5 4 2	6 4 3	2398.382	2.5 E-06	10
8741.9373	P	121	3 2 1	3 2 2	1813.788	5.3 E-06	20
8741.9880	P	210	3 3 1	4 2 2	319.779	4.3 E-05	10
8742.2883		210	1 0 1	1 1 0	42.371	1.81E-04	6
8742.4159		121	3 3 1	3 3 0	1907.816	1.71E-05	6
8742.9292		111	2 1 2	3 1 3	142.278	6.4 E-03	10
8743.8568	P	121	5 2 3	6 0 6	2041.783	4.0 E-06	20
8744.4460	R	121	5 4 2	5 4 1	2251.883	4.9 E-06	50
8744.9211	P	012	5 3 3	6 4 2	757.780	1.9 E-05	10
8746.4638	P	111	8 2 7	7 4 4	927.744	8.3 E-06	10
8747.2293		012	10 0 10	11 1 11	1327.119	8.8 E-06	10
8747.3524		012	10 1 10	11 0 11	1327.109	2.35E-05	6
8747.7700	R	121	4 4 1	4 4 0	2129.818	8.8 E-06	20
8747.7700	R	121	4 4 0	4 4 1	2129.800	8.8 E-06	20
8748.1763		111	6 2 5	6 2 4	502.773	2.57E-04	6
8748.8789	P	012	4 4 1	5 5 0	742.078	3.9 E-05	10
8748.9097	P	012	4 4 0	5 5 1	742.073	1.0 E-05	50
8749.0544		111	4 1 4	4 1 3	275.497	8.81E-04	6
8749.8257	P	031	7 5 2	8 5 1	888.832	1.3 E-05	10
8750.0883		012	5 2 4	6 3 3	681.548	1.8 E-05	10
8750.2476		111	8 3 6	8 3 5	1050.187	4.95E-06	6
8750.8302	R	121	2 1 1	2 1 2	1677.062	1.3 E-05	20
8750.7319	P	210	4 2 2	5 1 5	328.825	3.0 E-05	10
8751.0658	P	012	3 0 3	4 2 2	382.518	6.8 E-06	10
8751.5023		012	5 3 2	6 4 3	758.724	5.42E-05	6
8751.7108		210	3 2 1	4 1 4	224.838	2.09E-04	6
8751.9223		031	7 5 3	6 5 2	888.598	4.9 E-06	10
8752.3576	R	121	5 5 0	5 5 1	2406.141	4.8 E-06	20
8752.3577	R	121	5 5 1	5 5 0	2406.143	4.8 E-06	20
8754.7418	P	111	10 4 7	10 4 6	1618.452	6.3 E-06	20
8754.9302		111	1 1 0	2 1 1	95.175	4.8 E-03	10
8755.8714	R	111	7 3 4	8 5 1	888.832	3.2 E-06	20
8756.0862	R	031	8 4 4	8 2 7	889.800	2.3 E-06	10
8756.0862	R	130	4 4 1	3 1 2	173.365	2.3 E-06	10
8756.8941	P	012	8 2 6	9 3 7	1218.232	2.8 E-06	10
8757.2441		121	1 0 1	0 0 0	1594.767	6.8 E-06	10
8757.3956		210	5 2 3	6 1 6	447.752	2.85E-06	6
8757.5820		210	3 3 0	4 2 3	300.382	1.07E-04	6
8760.1610		111	1 0 1	2 0 2	70.090	8.8 E-03	10
8760.4201		210	2 2 0	3 1 3	142.278	1.1 E-04	10
8760.8926	P	111	6 3 3	7 1 6	704.214	1.48E-05	6
8761.0357	P	012	7 1 6	7 4 3	921.237	3.2 E-06	20
8763.0868	P	012	9 2 7	10 2 8	1437.969	2.1 E-06	20
8763.1293		012	9 1 8	10 2 9	1292.834	1.8 E-06	10
8763.4680		012	9 2 8	10 1 9	1293.018	9.8 E-06	10
8766.0400		111	1 1 1	2 1 2	79.499	1.5 E-02	10
8769.0899	P	130	5 5 1	4 4 0	488.134	1.3 E-05	20
8769.1303	P	130	5 5 0	4 4 1	488.107	3.8 E-06	10
8769.4349	P	111	7 0 7	6 2 4	802.773	1.7 E-06	10
8770.1242		012	7 2 5	8 3 6	1008.118	2.89E-06	6
8770.9647	P	012	6 0 6	8 3 5	681.548	8.3 E-06	10
8771.5320		111	5 2 4	5 2 3	446.510	2.05E-03	6

SIGMA CM-1		v'' V1D	J''KA''KC''	J''KA''KC''	E'' CM-1	INTENSITY CM-2 ATM-1	%
8772.2975		111	3 1 3	3 1 2	173.365	3.9 E-03	10
8772.7765		012	4 3 2	5 4 1	610.340	8.33E-05	6
8773.1125		012	9 0 9	10 1 10	1114.569	5.31E-05	6
8773.2188		012	9 1 9	10 0 10	1114.533	1.66E-05	6
8773.4680	P	111	5 3 2	6 1 5	542.905	1.4 E-05	10
8773.5912		111	7 3 5	7 3 4	842.356	4.9 E-04	10
8774.5355		012	4 3 1	5 4 2	610.113	3.0 E-05	10
8775.1965	P	121	2 1 2	1 1 1	1634.969	1.8 E-05	10
8776.6044		111	9 4 6	9 4 5	1360.235	5.7 E-05	10
8777.6443	P	012	6 1 5	6 4 2	757.780	5.0 E-06	10
8777.7393		111	11 5 7	11 5 6	1998.996	6.3 E-06	10
8778.6577		121	2 0 2	1 0 1	1618.559	3.01E-05	6
8781.3634		210	1 1 0	1 0 1	23.794	1.9 E-04	10
8782.4875		012	6 2 4	7 3 5	816.894	1.8 E-05	10
8783.2060	P	111	0 0 0	1 0 1	23.793	1.3 E-02	10
8784.8362	P	012	5 1 4	5 4 1	610.340	5.4 E-06	10
8785.1077	P	012	4 1 3	4 4 0	488.134	1.2 E-06	20
8785.7992	P	111	6 4 2	7 2 5	782.409	3.8 E-06	10
8786.6875	P	210	2 1 1	2 0 2	70.090	7.8 E-05	10
8786.9734	P	210	5 3 2	4 4 1	488.107	1.8 E-06	10
8787.1787	R	130	4 4 0	3 1 3	142.278	2.0 E-05	10
8787.1787	R	121	2 1 1	1 1 0	1640.506	2.0 E-05	10
8788.2226		012	8 2 7	9 1 8	1079.080	2.72E-05	6
8788.4002	P	012	4 2 3	5 3 2	508.812	9.17E-05	6
8789.6524	P	111	4 2 3	4 2 2	315.779	1.7 E-03	10
8790.0315	P	111	2 1 2	2 1 1	95.175	2.8 E-03	10
8790.2997	P	060	6 1 6	5 4 1	610.340	8.3 E-06	10
8791.1838		111	6 3 4	6 3 3	561.548	4.7 E-04	10
8791.5213	P	111	10 5 6	10 5 5	1724.707	7.0 E-06	20
8791.8268		111	6 0 6	5 2 3	448.510	7.73E-05	6
8791.8933	P	130	6 5 2	5 4 1	610.340	4.7 E-06	20
8792.4039	R	111	8 4 5	8 4 4	1131.776	8.5 E-05	20
8792.4039	R	210	2 0 2	1 1 1	37.138	8.5 E-05	20
8793.2832		121	3 1 3	2 1 2	1677.062	2.9 E-05	10
8793.4512		012	8 3 6	9 2 7	1201.921	1.2 E-05	10
8794.3001	R	111	4 1 3	3 3 0	285.418	2.8 E-05	20
8795.0727		111	4 3 1	5 1 4	399.457	4.12E-05	6
8795.4322	R	031	8 3 5	7 1 6	704.214	1.8 E-06	50
8795.7116		012	5 2 3	6 3 4	648.978	7.87E-05	6
8796.1715		111	4 2 2	5 0 5	325.347	5.4 E-05	10
8796.4440		210	3 1 2	3 0 3	138.761	1.8 E-04	10
8796.7565	P	111	11 6 6	11 6 5	2144.047	1.4 E-06	10
8797.2549		121	3 0 3	2 0 2	1684.870	1.1 E-05	10
8797.9924		012	8 0 8	9 1 9	920.211	3.80E-05	6
8798.1221	P	111	3 2 1	4 0 4	222.052	4.2 E-05	10
8798.3039	P	210	3 1 2	2 2 1	134.902	9.0 E-06	20
8798.3691	P	012	8 1 8	9 0 9	920.169	9.8 E-05	10
8799.0719		012	3 3 1	4 4 0	488.134	3.4 E-05	10
8799.3302		012	3 3 0	4 4 1	488.107	9.7 E-05	10
8799.8422		210	1 1 1	0 0 0	0.000	7.98E-06	6
8801.0765	P	111	9 5 5	9 5 4	1477.297	6.42E-06	6
8801.8351	P	111	3 2 2	3 2 1	212.156	1.1 E-02	10
8802.1664	R	111	5 3 3	5 3 2	508.812	1.9 E-02	20
8802.1664	R	111	1 1 1	1 1 0	42.371	1.9 E-02	20
8802.8530	P	111	7 4 4	7 4 3	931.237	8.3 E-04	20
8803.1838		210	3 2 1	3 1 2	173.365	3.15E-04	6
8803.4558	P	111	10 6 4	10 6 5	1874.973	8.4 E-06	10
8803.7999	P	111	3 0 3	2 2 0	138.163	4.08E-05	6
8803.8192		210	6 3 4	5 4 1	610.340	1.0 E-05	10
8804.8758		111	9 5 4	9 5 5	1474.981	2.14E-05	6
8805.1907		210	5 2 3	5 1 4	399.457	1.30E-04	6
8805.9591		111	5 0 5	4 2 2	315.779	4.75E-05	6
8806.8735	P	012	7 1 6	8 2 7	885.600	6.3 E-06	10
8807.3806	P	012	5 0 5	5 3 2	508.812	3.63E-04	6
8807.5232		210	2 2 0	2 1 1	95.175	1.21E-04	6
8807.9875	P	111	8 5 4	8 5 3	1259.812	7.18E-05	6
8808.4686	P	111	2 2 1	2 2 0	138.163	8.2 E-03	10
8808.8756	P	111	8 5 3	8 5 4	1259.188	1.85E-04	6
8808.3020	P	111	2 2 0	3 0 3	138.761	1.2 E-04	10
8808.2806		111	4 3 2	4 3 1	383.842	3.1 E-03	10
8808.5316	R	111	6 4 3	6 4 2	757.780	3.7 E-04	50
8808.5500	R	111	7 4 3	7 4 4	927.744	2.2 E-04	50
8808.7930	P	111	9 6 4	9 6 3	1631.384	3.59E-05	6
8808.9189		121	4 1 4	3 1 3	1739.484	1.0 E-05	10
8810.1821	R	111	8 4 4	8 4 5	1122.709	3.53E-04	6
8810.1821	R	111	4 0 4	3 2 1	212.158	3.53E-04	6
8810.3934	P	121	3 1 2	2 1 1	1693.852	9.0 E-06	20
8811.0630		111	2 2 0	2 2 1	134.902	2.5 E-02	10
8811.4844		111	6 4 2	6 4 3	756.724	1.8 E-03	10
8812.0143		111	4 3 1	4 3 2	382.518	9.1 E-03	10
8812.4049	P	111	5 3 2	5 2 3	503.968	1.29E-03	6
8812.9772	R	111	3 3 1	3 3 0	285.418	2.4 E-02	20
8812.9772	R	111	1 1 0	1 1 1	37.138	2.4 E-02	20
8813.3887	R	111	3 3 0	3 3 1	285.219	7.4 E-03	20
8813.3887	R	111	7 5 3	7 5 2	1059.835	7.4 E-03	20
8813.8391	P	111	7 5 2	7 5 3	1059.847	1.81E-04	6
8813.8735	P	111	3 2 1	3 2 2	208.301	4.1 E-03	10
8814.0288	P	111	5 4 2	5 4 1	610.340	4.8 E-03	10
8814.4302	P	111	5 4 1	5 4 2	610.113	1.5 E-03	10
8814.8287	P	210	3 0 3	2 1 2	79.499	2.2 E-04	10
8814.7917	P	111	9 4 5	9 4 6	1360.988	2.01E-05	6
8815.1718	P	130	7 5 3	6 4 2	757.780	2.8 E-06	20
8815.2528		031	5 5 1	5 3 2	508.812	1.8 E-06	10
8815.4188	P	111	8 6 2	8 6 3	1411.812	1.1 E-04	10
8815.8888	P	111	8 6 3	8 6 2	1411.848	3.8 E-05	10

TABLE 4 (*continued*)

SIGMA CM-1	V"	V'B	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
8818.1281		111	6 1 3	6 3 4	648.978	1.3 E-03	10
8818.4818		210	2 1 2	1 0 1	23.794	3.92E-04	6
8817.1429	P	111	5 1 4	4 3 1	383.842	2.2 E-05	10
8817.3711	P	111	4 4 1	4 4 0	488.134	3.4 E-03	20
8817.4146	P	111	4 4 0	4 4 1	488.107	1.1 E-02	10
8817.9704	P	111	6 5 2	6 5 1	888.832	5.8 E-04	20
8818.0380	P	111	6 5 1	6 5 2	888.598	1.5 E-03	10
8818.4215	P	031	8 2 6	7 0 7	588.243	3.8 E-06	10
8818.7718	P	111	9 3 6	8 5 3	1255.812	8.3 E-06	20
8818.9105	B	012	7 6 2	7 7 1	1394.813	4.18E-06	6
8818.9105	B	012	7 6 1	7 7 0	1394.813	4.18E-06	6
8820.1372	P	031	5 5 0	5 3 3	503.988	1.7 E-05	10
8820.3403	P	210	2 2 1	2 1 2	79.495	2.6 E-03	10
8820.9363	B	111	7 6 2	7 8 1	1216.193	3.5 E-04	20
8820.9363	B	111	7 6 1	7 6 2	1216.189	3.5 E-04	20
8821.1573	P	111	4 2 2	4 2 3	300.362	5.0 E-03	10
8821.6774	P	031	6 5 1	6 3 4	648.978	1.40E-04	6
8821.7838		031	7 5 2	7 3 5	816.894	6.3 E-05	10
8821.9196	B	111	5 5 1	5 5 0	742.078	5.0 E-03	20
8821.9198	B	111	5 5 0	5 5 1	742.073	5.0 E-03	20
8822.1266	B	210	5 2 3	4 3 2	382.916	4.8 E-05	10
8822.1268	B	012	3 2 2	4 3 1	383.842	4.8 E-05	10
8822.4378	B	012	7 1 7	8 0 8	744.064	4.7 E-05	20
8822.7370		012	7 0 7	8 1 8	744.163	1.83E-04	6
8823.1144	P	111	3 3 0	4 1 3	275.497	5.3 E-06	10
8823.2909	P	012	3 1 3	4 2 2	315.779	2.3 E-05	10
8823.3405	P	111	10 4 6	10 4 7	1581.336	1.5 E-05	10
8823.7076	P	210	7 3 5	8 0 8	744.064	1.1 E-05	10
8824.0009	P	111	2 1 1	2 1 2	79.495	5.7 E-03	10
8824.6013	P	210	5 3 3	6 0 6	446.697	2.9 E-06	50
8825.1842		121	5 1 5	4 1 4	1821.598	2.52E-05	6
8825.8209		012	5 1 5	7 2 6	709.608	3.0 E-05	10
8826.1084	B	111	6 6 1	6 6 0	1045.058	1.21E-03	6
8826.1084	B	111	6 6 0	6 6 1	1045.057	1.21E-03	6
8826.7242	P	210	4 1 3	3 2 2	206.301	7.3 E-06	20
8826.8979	P	012	7 3 5	8 2 6	982.912	7.3 E-06	20
8826.9337	P	111	11 7 5	11 7 4	2321.904	9.7 E-07	50
8827.1203	P	111	7 2 5	6 4 2	757.780	2.8 E-06	20
8827.1688	B	121	5 0 5	4 0 4	1817.450	8.7 E-06	20
8827.2556	P	210	4 3 2	5 0 5	325.347	1.0 E-05	20
8827.3173	P	031	8 5 3	8 3 6	1006.116	2.2 E-05	20
8827.4812	P	210	3 2 2	3 1 3	142.278	3.15E-05	6
8827.6147		111	7 3 4	7 3 5	816.894	1.1 E-04	10
8827.8889	B	121	4 2 3	3 2 2	1813.788	8.0 E-06	20
8828.5892		210	5 3 2	5 2 3	446.910	1.50E-04	6
8828.8108	B	210	5 1 4	5 0 5	325.347	6.4 E-05	20
8828.8108	B	031	7 3 5	6 1 6	447.252	6.4 E-05	20
8829.0937	P	111	8 1 7	7 3 4	842.356	6.0 E-06	10
8829.9535	P	012	3 2 1	4 3 2	382.516	1.5 E-04	10
8830.2319		111	1 0 1	0 0 0	0.000	4.8 E-03	10
8830.4087	P	210	3 1 3	2 0 2	70.090	1.8 E-04	10
8832.1600		111	6 1 5	5 3 2	508.812	6.06E-05	6
8832.3105	P	012	4 0 4	4 3 1	383.842	2.4 E-06	10
8833.0341		111	5 2 3	5 2 4	416.208	6.78E-04	6
8833.3285	B	111	9 7 2	9 7 3	1810.584	1.6 E-05	50
8833.3289	B	111	9 7 3	9 7 2	1810.588	1.6 E-05	50
8833.7635	P	210	8 3 6	9 0 9	920.189	2.7 E-06	20
8834.0239		210	4 0 4	3 1 3	142.278	1.09E-04	6
8835.2598		121	4 1 3	3 1 2	1772.413	1.98E-05	6
8835.7382	B	111	8 7 2	8 7 1	1590.890	7.58E-05	6
8835.7382	B	111	8 7 1	8 7 2	1590.890	7.58E-05	6
8836.4121		111	7 1 6	6 3 3	681.548	1.1 E-05	10
8837.3961	P	111	3 1 2	3 1 3	142.278	1.6 E-03	10
8837.4808	B	111	7 7 0	7 7 1	1394.813	2.2 E-04	20
8837.4808	B	111	7 7 1	7 7 0	1394.813	2.2 E-04	20
8837.8909	B	121	4 3 2	3 3 1	1907.452	4.4 E-06	20
8837.8872	B	210	4 3 1	4 2 2	315.779	8.2 E-05	50
8839.2172		121	8 1 8	5 1 5	1922.830	7.4 E-06	10
8840.2779		121	6 0 6	5 0 5	1920.789	1.8 E-05	10
8840.4133		111	8 3 5	8 3 6	1008.116	1.4 E-04	10
8840.8321		111	7 2 5	8 0 8	744.064	2.8 E-06	10
8841.0174	P	130	5 5 1	5 2 4	416.208	5.3 E-06	20
8841.1580		012	6 2 5	7 1 6	704.214	1.05E-04	6
8841.4504		031	8 6 2	7 8 1	1216.193	2.22E-06	6
8842.0649		012	5 1 4	6 2 5	552.911	1.5 E-04	10
8842.4611	P	012	9 5 4	9 6 3	1831.384	1.4 E-05	20
8842.8103	P	012	8 5 4	8 6 3	1411.612	1.5 E-05	10
8842.8885		210	4 1 4	3 0 3	136.761	5.3 E-04	10
8843.9583	P	012	8 5 3	8 6 2	1411.646	5.3 E-06	20
8844.7248	P	012	7 5 3	7 6 2	1216.189	1.2 E-05	10
8844.9283	P	012	7 5 2	7 6 1	1218.193	3.29E-05	6
8845.7880		210	3 3 0	3 2 1	212.158	2.26E-04	6
8846.0345	P	012	6 0 6	7 1 7	588.479	9.4 E-05	10
8846.1003	P	012	6 5 2	6 6 1	1045.057	8.1 E-05	10
8846.1294	P	012	8 5 1	8 8 0	1045.058	2.1 E-05	20
8846.7381		121	5 2 4	4 2 3	1900.017	1.4 E-06	10
8846.9458	P	210	5 2 4	5 1 5	328.825	3.0 E-06	50
8847.0795		111	8 2 6	8 2 5	552.911	2.17E-04	6
8847.2606		012	6 1 6	7 0 7	588.243	2.9 E-04	10
8847.7299		080	6 1 6	6 2 5	552.911	1.7 E-04	10
8848.0705		111	2 1 2	1 1 1	37.136	6.0 E-03	10
8849.3230	B	130	6 5 2	6 2 5	552.911	2.88E-04	6
8849.3230	B	111	9 8 2	9 8 1	2008.804	2.88E-04	6
8849.3230	B	111	9 8 1	9 8 2	2008.804	2.88E-04	6
8850.4248		012	2 2 1	3 3 0	285.418	1.72E-04	6
8850.7656		210	5 0 5	4 1 4	224.838	3.9 E-04	10
8851.0159	B	111	8 8 1	8 8 0	1789.041	3.1 E-05	20
8851.0159	B	111	8 8 0	8 8 1	1789.041	3.1 E-05	20
8851.5144	P	111	2 0 2	1 0 1	23.794	2.5 E-02	10
8852.0347	B	012	2 2 0	3 3 1	285.219	6.2 E-05	50
8852.2407		210	4 3 2	4 2 3	300.362	3.52E-04	6
8853.7271		210	5 1 4	4 2 3	300.362	3.58E-05	6
8854.8782		111	4 1 3	4 1 4	224.838	2.5 E-03	10
8855.0876	P	210	5 3 3	5 2 4	416.208	9.5 E-05	20
8855.1245	P	210	5 1 5	4 0 4	222.052	1.2 E-04	20
8856.8941	P	012	7 1 7	7 2 6	709.608	6.8 E-06	50
8857.0275		012	4 1 3	5 2 4	416.208	6.7 E-05	10
8857.4650	P	210	2 2 1	1 1 0	42.371	8.4 E-03	10
8858.1678	B	210	7 3 5	7 2 6	709.608	6.7 E-06	20
8858.4585	P	111	9 3 6	9 3 7	1218.232	9.8 E-06	10
8858.8629	B	121	5 3 3	4 3 2	2004.816	1.2 E-05	50
8858.8825	B	210	6 2 5	6 1 6	447.252	1.2 E-05	50
8859.2768	P	031	8 4 4	7 2 5	782.409	3.0 E-06	20
8861.1259	P	111	2 1 1	1 1 0	42.371	9.1 E-03	10
8861.3433	P	210	6 3 4	6 2 5	552.911	4.3 E-04	10
8862.1920	P	012	8 2 7	8 3 6	1008.118	1.8 E-06	10
8862.8849	P	012	7 0 7	7 1 6	704.214	1.0 E-05	10
8862.7477	P	121	5 2 3	4 2 2	1922.901	3.3 E-06	20
8862.8389	P	012	6 3 4	7 2 5	782.409	2.50E-05	6
8862.9555	P	012	9 3 6	8 6 3	1411.612	1.1 E-06	20
8863.3414		130	7 5 3	7 2 6	709.608	1.97E-05	6
8863.7441		111	5 3 3	5 1 6	447.252	1.49E-05	6
8864.7494	B	121	8 0 8	7 0 7	2180.643	8.1 E-06	20
8865.0360	B	210	6 0 6	5 1 5	326.825	1.1 E-04	20
8865.0360	B	210	7 1 6	7 0 7	586.243	1.1 E-04	20
8865.5663	B	050	8 8 0	5 1 5	328.825	5.0 E-06	20
8865.5663	B	210	2 2 0	1 1 1	37.136	5.0 E-06	20
8866.1871		111	3 1 3	2 1 2	79.495	2.6 E-02	10
8866.7065	B	121	5 4 2	4 4 1	2129.600	8.8 E-06	50
8867.2943		210	6 1 6	5 0 5	325.347	3.91E-04	6
8867.7081	P	012	6 4 3	6 5 2	888.598	7.7 E-06	20
8868.7323		012	5 2 4	6 1 5	542.908	4.81E-05	6
8868.9388	P	012	5 0 5	6 1 6	447.252	3.9 E-04	10
8869.1830	P	012	7 4 3	7 5 2	1059.835	4.3 E-06	50
8869.8731		111	3 0 3	2 0 2	70.090	9.8 E-03	10
8870.3901		012	5 1 5	6 0 6	446.697	1.4 E-04	10
8871.4886	B	121	6 1 5	5 1 4	2000.865	1.4 E-05	50
8871.4886	B	111	5 4 2	6 2 5	552.911	1.4 E-05	50
8871.4886	B	210	7 2 6	7 1 7	586.479	1.4 E-05	50
8872.1470		012	3 1 2	4 2 3	300.362	2.2 E-04	10
8873.5576	P	111	3 3 1	4 1 4	224.838	5.4 E-06	10
8874.3598	P	111	5 1 4	5 1 5	326.825	4.75E-04	6
8874.5447	B	111	2 2 1	2 0 2	70.090	2.5 E-04	20
8874.5447	B	111	10 3 7	10 3 8	1418.128	2.5 E-04	20
8874.5840	P	210	3 2 2	2 1 1	95.175	1.0 E-03	10
8875.2908		111	7 2 5	7 2 6	709.608	1.2 E-04	10
8877.2598		111	3 2 2	3 0 3	136.761	1.3 E-03	10
8878.1862		210	7 0 7	6 1 6	447.252	2.58E-04	6
8878.4173		210	7 1 7	6 0 6	448.697	1.3 E-04	10
8879.1193	P	111	3 2 2	2 2 1	134.902	1.3 E-02	10
8880.0339	P	121	7 2 6	6 2 5	2161.288	6.0 E-06	10
8882.8728		111	4 1 4	3 1 3	142.278	9.1 E-03	10
8883.3792		111	4 2 3	4 0 4	222.052	4.79E-04	6
8883.6326	P	012	7 2 6	7 3 5	818.894	9.7 E-06	50
8884.0110	P	111	3 2 1	2 2 0	136.163	4.2 E-03	10
8884.2217	B	210	8 2 7	8 1 8	744.163	5.4 E-06	50
8884.4988	P	111	3 1 2	2 1 1	95.175	7.1 E-03	10
8885.5740	P	111	4 0 4	3 0 3	136.761	2.8 E-02	10
8887.7878	P	210	4 2 3	3 1 2	173.365	1.4 E-03	10
8888.2782	P	121	6 4 2	5 4 1	2251.863	2.5 E-06	10
8888.5178	P	012	5 3 4	6 4 3	758.724	1.7 E-06	50
8888.8625		012	2 1 1	3 2 2	206.301	8.11E-05	6
8889.9274		012	4 0 4	5 1 5	328.825	1.7 E-04	10
8889.0063	P	012	8 0 8	6 1 5	542.908	1.3 E-05	10
8889.8895		210	8 0 8	7 1 7	586.479	8.1 E-05	10
8890.2628	P	210	8 1 8	7 0 7	588.243	2.0 E-04	10
8890.4783	P	031	7 4 4	6 2 5	552.911	1.57E-05	6
8892.0884		210	10 4 7	10 3 8	1446.128	1.3 E-05	10
8892.8547		111	5 2 4	5 0 5	325.347	1.1 E-03	10
8893.5120	P	012	4 1 4	5 0 5	325.347	5.0 E-04	10
8893.6069	P	111	8 2 6	8 2 7	889.600	1.7 E-04	10
8893.7203	P	111	8 1 8	8 1 8	447.252	7.9 E-04	10
8894.1777	B	012	8 5 4	9 4 5	1380.235	1.4 E-05	50
8894.8000	B	210	9 1 8	9 0 9	920.189	4.7 E-06	20
8895.0760	B	012	4 3 2	4 4 1	488.107	1.3 E-06	50
8897.0530		210	3 2 1	2 1 2	79.495	2.6 E-05	10
8898.0702		210	5 2 4	4 1 3	275.497	2.5 E-04	10
8898.1943		111	5 1 5	4 1 4	224.838	2.3 E-02	10
8898.7883	P	012	4 2 3	5 1 4	359.457	1.32E-04	6
8899.1304		111	4 2 3	3 2 2	208.301	5.4 E-03	10
8899.8938	P	111	5 0 5	4 0 4	222.052	7.8 E-03	10
8899.9273	P	012	5 3 3	6 2 4	602.773	1.2 E-05	10
8900.0369	P	012	8 3 5	6 4 2	757.780	8.1 E-06	20
8900.3082	P	210	9 0 9	8 1 8	744.163	1.3 E-04	10
8900.7516		210	9 1 9	8 0 8	744.064	3.9 E-05	10
8900.8743	P	012	5 1 5	5 2 4	416.208	4.0 E-06	10
8901.0348		012	1 1 1	2 2 0	136.163	6.2 E-05	10
8904.2529		111	8 2 6	8 0 8	448.897	2.29E-04	6
8904.6988	P	012	9 2 7	9 3 6	1282.919	1.8 E-06	20
8908.2400		012	7 3 4	7 1 3	911.237	1.7 E-05	10

TABLE 4 (*continued*)

SIGMA CM-1	V"	V'I	J"KA"KC"	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	I
8905.7258	B	031	8 7 2	7 7 1	1394.813	9.1 E-06	20
8905.7258	B	031	8 7 1	7 7 0	1394.813	9.1 E-06	20
8906.3510	P	111	4 1 3	3 1 2	173.385	2.1 E-02	10
8906.6636	P	210	6 2 5	5 1 4	399.457	3.6 E-04	10
8907.8751	P	012	5 2 4	5 3 3	503.888	7.9 E-06	50
8907.9040	B	012	1 1 0	2 2 1	134.902	2.2 E-03	50
8907.9040	B	111	4 3 2	3 3 1	285.219	2.2 E-03	50
8908.7440	B	012	3 0 3	4 1 4	224.838	5.3 E-04	20
8908.1125	P	111	4 3 1	3 3 0	285.418	8.8 E-03	10
8908.3821	P	111	4 2 2	3 2 1	212.156	1.8 E-02	10
8908.8268	P	111	6 3 4	6 1 5	542.905	1.2 E-04	10
8908.9552	P	210	10 0 10	9 1 9	920.211	2.1 E-05	10
8910.8779		210	10 1 10	9 0 9	920.169	6.6 E-05	10
8911.4616	P	111	7 1 6	7 1 7	586.479	1.4 E-04	20
8911.5379	P	111	5 3 3	5 1 4	399.457	4.6 E-04	10
8911.7334		111	7 3 5	7 1 6	704.214	2.5 E-04	10
8912.2568		111	6 1 6	5 1 5	328.825	6.0 E-03	10
8912.5905		111	9 2 7	9 2 8	1080.389	2.3 E-05	10
8912.9834		111	6 0 6	5 0 5	325.347	1.8 E-02	10
8913.9502	B	012	6 4 3	7 3 4	842.358	5.5 E-06	50
8914.3202	B	012	9 3 6	9 4 5	1380.235	1.5 E-06	20
8914.3202	B	012	9 5 3	9 4 6	1340.885	1.5 E-06	20
8915.0512	P	210	7 2 6	6 1 5	542.905	6.2 E-05	10
8915.6959	B	012	4 2 3	4 3 2	382.516	1.9 E-05	50
8917.0060	B	012	3 1 3	4 0 4	222.052	4.8 E-04	20
8917.0060	B	111	7 2 6	7 0 7	588.243	4.8 E-04	20
8917.5102	P	111	8 3 6	8 1 7	882.891	5.0 E-05	10
8917.8803		111	5 2 4	4 2 3	300.362	1.4 E-02	10
8917.9202	P	210	11 1 11	10 0 10	1114.533	1.1 E-05	10
8918.4975	B	210	11 0 11	10 1 10	1114.549	4.2 E-05	20
8918.4975	B	012	4 1 4	4 2 3	300.362	4.2 E-05	20
8920.7570	P	012	3 2 2	3 3 1	285.219	5.3 E-06	50
8921.1624		210	3 3 0	3 0 3	138.781	1.51E-05	6
8921.8314	P	210	3 3 1	2 2 0	138.183	9.5 E-07	10
8922.1704	P	111	2 2 0	1 0 1	23.794	4.81E-04	6
8922.8996	P	012	7 4 3	8 3 6	1008.118	1.9 E-06	20
8922.9708	P	012	8 2 6	9 3 5	1050.157	1.7 E-06	20
8923.0220	P	210	3 3 0	2 2 1	134.902	6.4 E-06	10
8924.1756	B	210	10 3 8	10 2 9	1293.634	1.0 E-04	10
8924.1756	B	210	8 2 7	7 1 6	704.214	1.0 E-04	10
8925.0319	P	111	3 3 1	3 1 2	173.385	1.5 E-04	10
8925.2222	P	111	7 1 7	6 1 6	447.252	1.2 E-02	10
8925.4938	B	111	5 1 4	4 1 3	275.497	7.9 E-03	20
8925.4938	B	111	7 0 7	6 0 6	446.697	7.9 E-03	20
8926.0008		111	9 3 7	9 1 8	1079.080	6.14E-05	6
8926.4729		012	2 0 2	3 1 3	142.278	1.7 E-04	10
8927.0814		012	3 2 1	3 3 0	285.418	2.5 E-05	10
8927.2850		111	8 1 7	8 1 8	744.183	1.89E-04	6
8928.4787	P	111	5 3 3	4 3 2	382.516	6.7 E-03	10
8929.1744		210	9 1 8	8 2 7	885.800	3.7 E-05	10
8930.1588	B	111	8 2 7	8 0 8	744.084	7.4 E-05	50
8930.4731	P	012	3 2 2	4 1 3	275.497	4.2 E-05	10
8930.9338	P	012	4 0 4	3 3 1	285.219	4.0 E-06	10
8931.1548		111	10 2 8	10 2 9	1293.634	1.7 E-05	10
8931.3420		012	4 2 2	4 3 1	383.842	1.2 E-05	10
8931.5937	P	210	4 3 1	4 0 4	222.052	1.1 E-05	20
8932.2188		031	9 3 7	8 1 8	744.183	1.08E-04	6
8932.5303		111	5 3 2	4 3 1	383.842	2.5 E-03	10
8932.8513	P	012	6 1 5	6 2 4	602.773	1.5 E-05	10
8932.7880		012	3 1 3	3 2 2	206.301	2.3 E-05	10
8933.2212	P	111	10 4 7	10 2 8	1437.989	5.1 E-06	20
8933.4633		111	5 2 3	4 2 2	315.779	4.2 E-03	10
8933.8742		012	5 0 5	4 3 2	382.516	5.8 E-04	10
8933.8834		012	7 2 5	7 3 4	842.358	1.5 E-05	10
8934.0587	P	012	9 1 8	8 4 5	1122.709	3.2 E-06	50
8934.7405		111	6 2 5	5 2 4	416.208	3.5 E-03	10
8936.9174	P	111	9 4 6	9 2 7	1201.921	2.4 E-05	10
8939.0758	P	210	4 2 2	3 1 3	142.278	7.1 E-06	10
8935.5501	P	111	13 3 11	14 1 14	2073.518	8.5 E-06	20
8935.5922	P	111	11 4 8	11 2 9	1890.665	4.2 E-06	50
8935.8781		012	5 2 3	5 3 2	508.812	3.7 E-05	10
8936.0065	P	111	10 3 8	10 1 9	1293.019	9.2 E-06	10
8936.1328	P	012	8 1 8	7 2 5	782.408	8.3 E-06	20
8936.2625	P	111	5 4 2	4 4 1	488.107	2.5 E-03	10
8936.4103	P	111	5 4 1	4 4 0	488.134	8.4 E-04	10
8936.8081		012	4 3 2	5 2 3	446.510	3.0 E-05	10
8937.1317	P	111	8 1 8	7 1 7	588.479	2.2 E-03	20
8937.2739	P	111	8 0 8	7 0 7	588.243	7.5 E-03	10
8937.6322		012	6 2 4	6 3 3	661.548	1.2 E-05	10
8938.4112		012	7 5 2	8 4 5	1122.709	1.4 E-06	10
8940.2634	P	031	5 5 0	4 3 1	383.842	4.5 E-05	10
8940.4462		210	4 3 2	3 2 1	212.156	1.0 E-04	10
8940.8561		012	4 0 4	4 1 3	275.497	2.9 E-05	10
8940.9884	B	012	8 4 2	7 3 5	818.694	4.1 E-06	50
8941.2709	P	111	8 4 5	8 2 6	982.912	2.3 E-05	10
8941.5153	P	111	8 1 5	5 1 4	399.457	1.2 E-02	10
8942.4744	P	111	11 2 9	11 2 10	1525.137	3.2 E-06	10
8943.3813	P	012	2 1 2	2 2 1	134.902	6.8 E-06	10
8943.8960		012	1 0 1	2 1 2	79.695	3.64E-04	6
8944.2903		111	9 2 8	9 0 9	920.169	7.24E-05	6
8945.6204		210	10 2 9	9 1 8	1079.080	2.5 E-06	10
8946.0319	P	111	11 1 9	11 1 10	1524.849	7.1 E-06	10
8947.3440	P	210	4 3 1	3 2 2	208.301	6.8 E-06	20
8948.1499	P	111	9 0 9	8 0 8	744.084	1.3 E-02	10
8948.4417		111	9 1 9	8 1 8	744.183	3.7 E-03	10

SIGMA CM-1	V"	V'I	J"KA"KC"	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	I
8948.7646	P	111	6 3 4	5 3 3	503.988	1.9 E-03	10
8949.7319		210	5 3 2	5 0 5	325.347	2.4 E-05	10
8949.9957	P	012	5 4 2	6 3 3	661.548	1.0 E-05	50
8950.0638	P	111	3 2 1	2 0 2	70.080	3.3 E-04	10
8950.3347	P	111	7 2 6	6 2 5	552.911	6.5 E-03	10
8951.8807	P	111	7 4 4	7 2 5	782.409	5.30E-06	6
8952.4318		031	10 2 8	9 0 9	920.169	3.4 E-04	10
8953.4804		111	6 2 4	5 2 3	446.510	3.0 E-03	10
8954.1310	P	060	6 1 6	5 2 3	446.510	2.1 E-03	10
8954.3288	P	111	10 1 9	10 1 10	1114.549	2.0 E-05	10
8955.0549		111	7 1 8	6 1 5	542.905	2.3 E-03	10
8955.3182	P	012	5 3 2	6 2 5	552.911	1.3 E-05	10
8955.5169		210	5 3 3	4 2 2	315.779	1.8 E-04	10
8956.7238	P	130	6 5 2	5 2 3	446.510	2.4 E-03	10
8956.2948		111	6 3 3	5 3 2	508.812	4.9 E-03	10
8957.1910	P	111	6 4 3	5 4 2	610.113	1.3 E-03	10
8957.4589		012	4 1 3	4 2 2	315.779	5.3 E-05	10
8957.6015		111	10 1 10	9 1 9	920.211	6.1 E-04	10
8957.8679		111	6 4 2	5 4 1	610.340	2.6 E-03	10
8958.6354		111	10 0 10	9 0 9	920.169	1.3 E-03	10
8959.0003		012	2 1 1	2 2 0	138.183	3.97E-05	6
8959.9223	P	012	8 5 2	7 4 3	931.237	1.7 E-06	10
8960.2188	P	012	3 0 3	3 1 2	173.385	1.9 E-04	10
8960.3528	P	012	3 1 2	3 2 1	212.156	1.8 E-04	10
8961.8440		031	6 5 1	5 3 2	508.812	7.05E-04	6
8962.4778	P	012	2 2 1	3 1 2	173.385	5.88E-05	6
8962.8295	B	012	5 4 1	6 3 4	648.978	9.2 E-06	20
8962.9998		012	0 0 0	1 1 1	37.138	8.42E-05	6
8964.0081		130	10 3 8	9 0 9	920.169	1.62E-04	6
8964.5301	B	111	6 5 2	5 5 1	742.073	9.8 E-04	20
8964.5301	B	111	6 5 1	5 5 0	742.078	9.8 E-04	20
8964.6136	P	111	8 2 7	7 2 6	709.808	1.2 E-03	10
8964.9990		210	7 3 5	6 2 4	602.773	2.31E-04	6
8965.2408	B	111	11 2 10	11 0 11	1327.109	1.4 E-05	20
8966.2431		031	6 5 2	5 3 3	503.988	2.78E-05	6
8966.8856	P	111	11 1 11	10 1 10	1114.549	7.2 E-04	10
8966.9135	P	111	11 0 11	10 0 10	1114.533	1.7 E-04	20
8966.9688	P	111	7 3 5	6 3 4	648.978	3.7 E-03	10
8967.1090	P	012	1 1 1	2 0 2	70.080	5.4 E-05	20
8967.2333	P	111	8 1 7	7 1 6	704.214	3.8 E-03	10
8967.4548	P	111	11 1 10	11 1 11	1327.119	1.1 E-05	50
8967.7443		210	6 3 4	5 2 3	446.510	1.75E-03	6
8968.1924	P	121	5 2 3	4 0 4	1817.450	1.7 E-08	10
8968.4394	P	012	4 3 1	5 2 4	416.208	9.2 E-06	20
8969.0937		111	4 3 1	4 1 4	224.838	6.43E-05	6
8970.1783		130	7 5 3	6 2 4	602.773	3.94E-04	6
8971.4233	P	012	3 3 1	4 2 2	315.779	7.5 E-06	10
8971.5190		210	8 3 6	7 2 5	782.409	1.8 E-04	10
8973.5755		012	2 0 2	2 1 1	95.175	9.27E-05	6
8974.3375		111	12 1 12	11 1 11	1327.119	1.00E-04	6
8974.4052	P	111	12 1 11	12 1 12	1557.849	4.0 E-06	20
8974.9297	P	111	12 0 12	11 0 11	1327.109	3.0 E-04	10
8974.7171	P	210	5 3 2	4 2 3	300.382	3.8 E-05	10
8975.8804	P	111	12 2 11	12 0 12	1557.844	9.3 E-07	10
8978.9087	P	031	7 5 2	6 3 3	661.548	3.41E-04	6
8977.3858		111	7 4 4	6 4 3	756.724	1.8 E-03	10
8977.8801		111	5 4 2	5 2 3	446.510	4.43E-05	6
8978.7395		111	9 1 8	8 1 7	882.891	5.9 E-04	10
8978.8583	P	111	9 2 8	8 2 7	885.800	1.5 E-03	10
8979.5297		111	7 4 3	6 4 2	757.780	5.82E-04	6
8979.8131	P	210	5 2 3	4 1 4	224.838	8.9 E-06	10
8980.9264		012	9 3 6	10 2 9	1293.634	1.5 E-05	10
8981.1188	P	012	1 0 1	1 1 0	42.371	2.73E-04	6
8981.9410	B	111	13 0 13	12 0 12	1557.844	1.4 E-04	20
8981.9410	B	111	13 1 13	12 1 12	1557.849	1.4 E-04	20
8982.1258		111	7 2 5	6 2 4	602.773	1.1 E-03	10
8982.5949	P	210	4 4 1	3 3 0	285.418	1.81E-04	6
8982.7603	P	111	7 3 4	6 3 3	661.548	8.1 E-04	10
8983.7057		111	8 3 6	7 3 5	818.694	6.4 E-04	10
8984.0265	B	111	7 5 2	8 5 1	888.632	8.3 E-04	20
8984.0265	B	111	7 5 3	8 5 2	888.588	8.3 E-04	20
8984.7580	P	111	4 2 2	3 0 3	138.781	1.2 E-03	10
8985.0834	P	012	6 1 6	5 2 3	446.510	6.8 E-06	10
8987.0784	P	012	3 3 0	4 2 3	300.382	1.7 E-10	10
8987.0300	P	012	3 2 1	4 1 4	224.838	2.3 E-05	10
8987.0977	P	111	10 2 9	9 2 8	1080.389	2.5 E-04	10
8988.2272	B	111	14 0 14	13 0 13	1808.671	3.8 E-06	20
8988.2272	B	111	14 1 14	13 1 13	1808.673	3.8 E-06	20
8988.4782	P	012	5 5 0	6 4 3	756.724	1.0 E-06	20
8988.5588	P	012	4 2 2	5 1 5	328.825	2.0 E-06	20
8989.0007		111	10 1 9	9 1 8	1079.080	7.4 E-04	10
8991.0782		031	8 5 3	7 3 4	842.358	1.5 E-04	10
8991.9429		031	7 5 1	6 3 4	648.978	6.47E-05	6
8992.0738	B	111	7 6 2	6 6 1	1045.067	1.5 E-04	20
8992.0738	B	111	7 6 1	6 6 0	1045.068	1.5 E-04	20
8993.5569	B	111	15 0 15	14 0 14	2073.518	1.5 E-06	20
8993.5569	B	111	15 1 15	14 1 14	2073.518	1.5 E-06	20
8994.0756		012	2 2 0	3 1 3	142.278	9.2 E-06	10
8995.4581		111	9 5 5	9 3 6	1282.919	2.2 E-04	10
8996.4396		111	8 4 5	7 4 4	927.744	3.3 E-04	10
8998.7002		111	8 2 6	7 2 5	782.408	2.8 E-03	10
8997.4163	P	012	5 2 3	6 1 6	447.252	3.1 E-06	20
8997.9719	B	111	16 0 16	15 0 15	2358.304	3.5 E-06	20
8997.9719	B	111	16 1 16	15 1 15	2358.304	3.5 E-06	20
8998.7186		111	11 2 10	10 2 9	1293.634	3.03E-04	6

TABLE 4 (*continued*)

SIGMA CM-1	V"	V'B	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
8998.9648		111	9 3 7	8 3 6	1008.116	8.88E-04	6
9001.4775 B		111	17 1 17	16 1 16	2560.949	4.0 E-06	20
9001.4775 B		111	17 0 17	16 0 16	2560.949	4.0 E-06	20
9001.5604 P		111	11 1 10	10 1 9	1293.019	9.4 E-05	10
9001.8555 P		111	8 4 4	7 4 3	931.237	9.8 E-04	10
9003.4336		111	3 3 0	2 1 1	95.175	6.32E-05	6
9004.1727 P		111	8 3 5	7 3 4	842.356	1.8 E-03	10
9004.2314 P		111	8 5 4	7 5 3	1059.847	1.5 E-04	20
9004.4070 P		111	8 5 3	7 5 2	1059.835	3.96E-04	6
9005.1607 P		111	4 4 0	4 2 3	300.382	2.10E-05	6
9008.3309		012	9 2 8	8 3 5	1050.197	8.9 E-06	10
9007.4088		111	12 1 11	11 1 10	1524.849	1.07E-04	6
9008.3358		111	5 4 1	5 2 4	418.208	1.2 E-05	10
9008.5684		111	12 2 11	11 2 10	1525.137	3.7 E-05	10
9009.2868 P		012	8 6 3	7 7 0	1394.813	8.5 E-06	20
9010.0647 P		111	9 2 7	8 2 6	982.912	3.23E-04	6
9010.8330		111	8 6 2	7 6 1	1218.193	1.1 E-04	10
9010.9558		111	8 6 3	7 6 2	1218.189	4.0 E-05	10
9012.7929		111	10 3 8	9 3 7	1218.232	1.24E-04	6
9013.7219 P		111	8 5 4	8 3 5	1050.157	1.1 E-06	10
9014.1311 P		111	9 4 6	8 4 5	1122.709	4.63E-04	6
9014.2299 P		012	6 4 3	5 5 0	742.078	8.7 E-06	50
9014.5647		012	5 3 3	4 4 0	488.134	1.2 E-06	20
9015.0110 P		111	13 2 12	12 2 11	1774.751	3.0 E-05	10
9015.2578		111	6 4 2	6 2 5	552.911	2.58E-05	6
9015.4768		012	6 4 2	5 5 1	742.073	2.0 E-06	10
9015.8452 P		210	4 3 2	3 0 3	136.761	1.9 E-05	20
9015.8989 P		210	10 3 8	9 2 7	1201.921	1.4 E-04	10
9016.0625		012	7 5 2	8 6 1	1045.057	1.79E-05	6
9016.7314		111	13 1 12	12 1 11	1774.619	1.1 E-05	10
9017.8538 P		111	6 3 3	6 1 6	447.252	1.4 E-05	10
9018.9020 P		111	3 3 1	2 1 2	79.495	1.17E-04	6
9019.0414 P		012	1 1 0	1 0 1	23.794	3.80E-04	6
9020.1177 P		012	5 3 2	4 4 1	488.107	2.0 E-06	10
9021.1655		111	4 3 1	3 1 2	173.385	3.90E-04	6
9022.8678 P		111	10 2 8	9 2 7	1201.921	2.65E-04	6
9023.2075		111	9 5 5	8 5 4	1255.166	2.0 E-04	10
9023.4054 P		031	6 5 1	6 1 6	447.252	1.8 E-06	10
9023.8012 P		111	9 4 5	8 4 4	1131.776	1.5 E-04	10
9023.9444 P		111	9 5 4	8 5 3	1255.912	5.1 E-05	20
9024.5315		111	9 3 6	8 3 5	1050.157	1.97E-04	6
9024.7718		111	14 1 13	13 1 12	2042.311	1.2 E-05	10
9025.0732		012	2 1 1	2 0 2	70.080	1.68E-04	6
9025.2518		111	11 3 9	10 3 8	1448.128	1.50E-04	6
9025.5457		012	8 2 7	7 3 4	842.356	2.39E-05	6
9027.1901		111	5 2 3	4 0 4	222.052	1.6 E-04	10
9027.7033 P		111	7 4 3	7 2 6	709.808	8.2 E-06	10
9029.1892		111	9 6 3	8 6 2	1411.846	2.2 E-05	10
9029.5851 P		111	9 6 4	8 6 3	1411.812	6.5 E-05	10
9029.6422 P		111	11 2 9	10 2 8	1437.969	4.7 E-05	10
9030.3048		111	10 4 7	9 4 6	1340.885	6.3 E-05	10
9030.8699		111	7 5 3	7 3 4	842.358	3.4 E-06	10
9031.8137 B		012	2 0 2	1 1 1	37.138	6.17E-05	6
9031.8137 B		111	8 7 1	7 7 0	1394.813	6.17E-05	6
9031.8137 B		111	8 7 2	7 7 1	1394.813	6.17E-05	6
9031.7720 P		111	15 2 14	14 2 13	2327.914	2.8 E-06	20
9034.9041 P		012	6 3 4	5 4 1	610.340	7.2 E-06	10
9035.7479		012	3 1 2	3 0 3	136.761	3.63E-04	6
9036.4447		111	12 3 10	11 3 9	1695.071	1.6 E-05	10
9038.5569		012	6 2 5	5 3 2	508.812	1.3 E-05	10
9037.1981 B		012	1 1 1	0 0 0	0.000	8.8 E-05	20
9037.8092		012	3 1 2	2 2 1	134.902	1.3 E-05	10
9037.7888		111	10 3 7	9 3 6	1282.919	1.5 E-04	10
9038.2260		012	8 5 4	7 6 1	1218.193	1.59E-05	6
9038.7791 P		012	7 2 6	6 3 3	681.548	1.99E-05	6
9039.0175 P		012	8 5 3	7 6 2	1218.189	8.3 E-06	50
9039.1060		012	3 2 1	3 1 2	173.385	3.59E-04	6
9039.8868		012	4 2 2	4 1 3	275.497	1.1 E-04	10
9040.4142 B		012	7 4 3	6 5 2	888.598	5.3 E-05	10
9040.4142 B		111	12 2 10	11 2 9	1890.885	5.3 E-05	10
9040.8757		111	3 3 2	4 1 3	275.497	1.60E-04	6
9041.2468 B		111	10 5 6	9 5 5	1474.981	2.9 E-05	20
9042.0784		012	2 2 0	2 1 1	95.175	8.60E-05	6
9043.4203		111	10 5 5	9 5 4	1477.297	9.00E-05	6
9044.4418 P		111	10 4 6	9 4 5	1360.225	1.57E-04	6
9044.8208		111	11 4 8	10 4 7	1581.336	8.78E-05	6
9045.0851		111	6 5 2	6 3 3	681.548	8.08E-05	6
9045.2323		012	5 2 3	5 1 4	399.467	2.28E-04	6
9045.5498		111	13 3 11	12 3 10	1962.506	1.50E-05	6
9047.0469 P		111	10 6 4	9 6 3	1631.384	2.9 E-05	10
9047.2933 P		111	8 6 4	8 2 7	885.800	5.5 E-06	20
9048.6102 P		031	5 5 0	4 1 3	275.497	1.2 E-06	10
9049.2480 P		210	5 3 3	4 0 4	222.052	8.2 E-06	10
9050.8446		111	4 3 2	3 1 3	142.278	6.9 E-05	10
9051.1837		012	4 1 3	4 0 4	222.052	8.02E-05	6
9052.0280 B		012	7 3 5	6 4 2	757.780	1.8 E-06	50
9053.2284 B		111	9 7 3	8 7 2	1590.890	1.3 E-05	20
9053.2284 B		111	9 7 2	8 7 1	1590.890	1.3 E-05	20
9054.0850		012	2 0 2	2 1 2	79.495	1.7 E-04	10
9054.4889		012	2 1 2	1 0 1	23.794	2.71E-04	6
9054.8131 P		111	14 2 12	13 2 11	2248.887	4.4 E-06	10
9055.1882 P		111	5 5 1	5 3 2	508.812	3.1 E-06	20
9055.2944		210	10 4 7	9 3 6	1282.919	1.19E-04	6
9055.4358 P		031	8 4 4	7 0 7	588.243	1.8 E-06	10
9056.2758 P		012	8 2 6	8 1 5	542.908	4.2 E-06	10
9056.3469 P		012	2 2 1	7 1 2	79.495	2.0 E-04	10
9056.5879 P		111	7 5 2	7 3 5	816.684	1.9 E-06	50
9057.1893 P		012	8 4 5	7 5 2	1059.835	9.3 E-06	10
9057.8255 P		111	6 5 1	6 3 4	648.978	7.5 E-06	10
9058.0138		111	11 5 7	10 5 6	1718.718	3.3 E-05	10
9058.1258 P		111	8 5 3	8 3 6	1006.116	2.1 E-06	20
9059.8451		012	9 5 5	8 8 2	1411.846	2.1 E-06	10
9060.3988 P		210	7 5 2	7 2 5	782.408	3.0 E-05	10
9061.7168		012	5 3 2	5 2 3	448.910	1.5 E-04	10
9062.2452		012	9 5 4	8 6 3	1411.812	9.3 E-06	10
9062.3885		012	8 3 5	8 2 6	982.912	8.9 E-08	10
9063.6910		012	3 2 2	3 1 3	142.278	8.22E-05	6
9064.1345 P		012	8 3 6	7 4 3	931.237	7.9 E-06	20
9065.6494		111	6 3 3	5 1 4	398.457	3.68E-04	6
9066.8332		111	11 6 6	10 6 5	1874.973	1.1 E-05	10
9068.9345 P		012	4 1 3	3 2 2	206.301	7.9 E-08	10
9068.8712 P		012	4 3 1	4 2 2	315.779	8.17E-05	6
9068.9795 P		012	3 1 3	2 0 2	70.080	9.08E-05	6
9069.2502		012	9 3 7	8 4 4	1131.778	2.0 E-06	10
9068.8283 P		012	5 1 4	5 0 5	325.347	1.50E-04	6
9070.1104 P		012	9 4 5	9 3 6	1282.919	5.8 E-08	20
9071.1983		031	6 5 1	5 1 4	339.457	4.06E-05	6
9072.0288		012	7 2 5	7 1 6	704.214	5.94E-05	6
9072.6460 P		012	9 3 6	9 2 7	1201.921	8.8 E-08	10
9073.3743		012	4 2 3	4 1 4	224.838	2.1 E-04	10
9073.8745 P		012	4 0 4	3 1 3	142.278	5.32E-05	6
9073.9726 B		111	10 7 3	9 7 2	1810.588	8.2 E-06	20
9073.9726 B		111	10 7 4	9 7 3	1810.584	8.2 E-06	20
9074.3942		111	12 3 9	11 3 8	1813.223	2.39E-05	6
9074.6434		111	6 2 4	5 0 5	325.347	7.60E-05	6
9075.2841 B		012	3 3 0	3 2 1	212.158	1.80E-04	6
9075.2841 B		050	6 1 6	5 0 5	325.347	1.80E-04	6
9076.8871		130	6 5 2	5 0 5	325.347	6.31E-05	6
9079.8909 P		111	12 5 7	11 5 6	1998.995	9.3 E-06	10
9080.4193 P		111	14 3 11	13 3 10	2414.725	1.1 E-06	20
9080.9042		012	3 3 1	3 2 2	206.301	5.26E-05	6
9082.0982		012	4 1 4	3 0 3	136.761	1.9 E-04	10
9082.4900		111	12 4 8	11 4 7	1899.008	1.5 E-05	10
9082.7581		012	4 3 2	4 2 3	300.382	1.59E-04	6
9085.0126		012	5 2 4	5 1 5	328.629	5.10E-05	6
9086.0842 P		210	7 5 2	6 4 3	756.724	9.3 E-06	10
9088.1571 P		111	5 3 3	4 1 4	224.838	9.8 E-05	10
9086.4920		012	5 3 3	5 2 4	416.208	4.7 E-05	10
9088.8601		012	7 4 3	7 3 4	842.356	3.1 E-05	10
9088.7328		012	6 1 5	6 0 6	448.897	2.9 E-05	10
9088.9061		210	6 3 4	5 0 5	325.347	2.9 E-05	10
9090.2328		012	9 2 8	8 1 7	882.891	9.7 E-06	10
9091.3529		012	5 0 5	4 1 4	224.838	1.64E-04	6
9091.8399 B		111	10 8 3	9 8 2	2009.804	3.1 E-06	20
9091.8399 B		111	10 8 2	9 8 1	2009.804	3.1 E-06	20
9092.3353		012	6 3 4	6 2 5	552.911	8.74E-05	6
9093.3868		111	4 4 0	3 2 1	212.158	7.28E-05	6
9093.4720		012	2 2 1	1 1 0	42.371	3.04E-04	6
9094.4887 P		111	11 7 5	10 7 4	2054.347	2.8 E-06	20
9094.8143		012	5 1 4	4 2 3	300.382	2.12E-05	6
9095.0338		012	5 1 5	4 0 4	222.052	4.11E-05	6
9095.5520		031	7 5 2	6 1 5	542.905	3.19E-05	6
9096.0003		012	6 4 2	6 3 3	681.548	1.83E-05	6
9097.8612 P		012	9 4 5	8 5 4	1255.188	1.1 E-06	10
9098.1176		012	6 2 5	8 1 6	447.252	9.32E-05	6
9098.8899		111	13 8 8	12 8 7	2433.803	1.0 E-06	10
9099.0218		111	5 4 2	5 0 5	325.347	1.9 E-06	10
9099.2023 P		111	4 4 1	3 2 2	206.301	2.9 E-05	10
9100.1177 P		012	2 2 0	1 1 1	37.138	1.0 E-04	10
9100.2034 P		012	7 3 5	7 2 6	709.808	1.6 E-06	10
9101.4038		111	7 3 4	6 1 5	542.908	4.89E-05	6
9102.9972		012	5 4 1	5 3 2	508.812	7.55E-05	6
9105.6893		012	6 0 6	5 1 5	328.629	1.4 E-05	10
9106.0300		012	7 1 6	7 0 7	588.243	5.37E-05	6
9106.4119		031	7 6 2	6 4 3	758.724	1.8 E-06	10
9107.1432 P		012	4 4 0	4 3 1	383.842	2.22E-08	6
9107.3308 P		012	6 4 3	6 3 4	648.978	5.96E-05	6
9107.5892		012	5 4 2	5 3 3	503.868	2.58E-05	6
9108.1560		012	6 1 6	5 0 5	325.347	7.38E-05	6
9108.2938 P		012	7 4 4	7 3 5	816.684	1.8 E-05	20
9108.3231 P		012	9 2 7	9 1 8	1079.880	1.2 E-06	20
9108.4388 P		012	4 4 1	4 3 2	382.816	8.91E-05	6
9108.7651		111	5 4 1	4 2 2	315.779	4.18E-05	6
9109.7742		012	8 3 6	8 2 7	885.800	2.33E-05	6
9110.7933 P		012	3 2 2	2 1 1	95.175	7.53E-05	6
9110.8897 P		012	8 6 5	8 3 6	1006.116	1.8 E-05	10
9112.5044 B		111	11 8 3	10 8 2	2234.283	7.1 E-07	20
9112.5044 B		111	11 8 4	10 8 3	2234.283	7.1 E-07	20
9113.6255 P		012	9 5 4	9 4 5	1360.225	4.6 E-06	20
9113.8484		012	7 2 6	7 1 7	588.479	1.38E-05	6
9117.5507 P		012	8 3 5	7 4 4	927.744	6.5 E-07	20
9119.2184 P		012	8 1 5	5 2 4	416.208	4.8 E-06	20
9119.6461		012	7 0 7	8 1 8	467.252	1.8 E-05	10
9119.8027 P		012	7 1 7	8 0 8	449.887	7.8 E-09	10
9120.8384 B		012	9 3 7	9 2 8	1080.388	2.6 E-06	20
9121.0774 B		210	7 3 5	6 0 6	448.897	1.0 E-06	50
9121.5890		111	6 4 2	5 2 3	448.910	1.28E-04	6
9123.4190		012	8 5 3	8 4 4	1131.778	1.9 E-06	10
9124.0882 P		111	5 4 2	4 2 3	300.382	1.13E-04	6
9124.1394		012	8 2 7	8 1 8	744.183	2.5 E-06	10

TABLE 4 (*concluded*)

SIGMA CM-1	V"	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
9124.8463		012	4 2 3	3 1 2	173.385	1.59E-04	6
9126.1075		111	6 3 4	5 1 5	328.825	4.37E-05	6
9126.2491		130	7 5 3	6 0 6	448.897	1.2 E-05	10
9126.4187	P	031	8 8 2	7 4 3	931.237	5.2 E-06	20
9129.2184		031	8 5 3	7 1 6	704.214	1.48E-05	6
9129.8838		012	7 5 2	7 4 3	931.237	1.71E-05	6
9130.6027		012	9 5 5	9 4 5	1340.885	8.9 E-07	10
9131.7134	B *	012	8 0 8	7 1 7	586.479	1.1 E-05	20
9131.7134	B	012	8 5 4	8 4 5	1122.709	1.1 E-05	20
9132.2959	P	012	8 1 8	7 0 7	586.243	7.3 E-06	10
9132.9742	P	012	3 2 1	2 1 2	79.498	1.7 E-04	10
9133.1711	P	012	7 5 3	7 4 4	927.744	5.5 E-06	10
9133.4170		012	6 5 1	6 4 2	757.780	9.7 E-06	10
9134.4330		012	6 5 2	6 4 3	758.724	2.8 E-05	10
9134.5359		111	7 4 3	6 2 4	602.773	4.3 E-05	10
9134.8586		012	5 5 0	5 4 1	610.340	2.36E-05	6
9135.0787	P	012	5 5 1	5 4 2	610.113	8.7 E-06	20
9136.1412		012	5 2 4	4 1 3	275.497	3.49E-05	6
9136.2730	P	012	9 2 8	9 1 9	920.211	8.8 E-06	20
9136.5950		012	9 1 8	9 0 9	920.189	1.18E-05	6
9138.2022		111	7 2 5	6 0 6	446.697	2.24E-05	6
9139.2603	P	012	7 1 6	6 2 5	552.911	6.8 E-06	10
9142.3155		111	8 3 5	7 1 6	704.214	7.92E-05	6
9143.5003		012	9 0 9	8 1 8	744.183	7.7 E-07	10
9145.9128		012	6 2 5	5 1 4	399.457	5.78E-05	6
9147.8475		111	7 4 4	7 0 7	586.243	1.2 E-06	10
9148.9308	P	012	8 6 3	8 5 4	1255.166	1.4 E-06	10
9150.4806		111	8 4 4	7 2 5	782.406	1.12E-04	6
9150.6785	P	012	3 3 0	3 0 3	136.781	5.9 E-06	20
9151.0420	P	012	3 3 1	2 2 0	136.183	1.2 E-04	10
9151.1034	P	111	6 4 3	5 2 4	416.208	3.6 E-05	10
9152.5368		012	3 3 0	2 2 1	134.902	3.4 E-04	10
9153.8898	P	012	7 8 1	7 5 2	1059.835	3.0 E-06	10
9156.0742	P	012	7 6 2	7 5 3	1059.847	1.1 E-06	10
9157.4233	P	012	7 2 6	6 1 5	542.905	9.7 E-06	10
9158.8859	B	012	6 6 0	6 5 1	888.832	2.2 E-06	50
9158.9220	P	012	6 6 1	6 5 2	888.598	5.9 E-06	10
9161.1407	P	111	11 8 3	12 4 8	2205.852	8.2 E-07	10
9162.5987	P	012	4 3 1	4 0 4	222.052	1.5 E-06	10
9164.0891	B	012	8 2 7	7 1 6	704.214	1.3 E-05	20
9166.8229	P	111	9 7 3	9 5 4	1477.297	8.5 E-07	20
9167.6842	P	210	8 3 6	7 0 7	586.243	5.2 E-06	20
9168.6951		111	7 3 5	6 1 6	447.252	7.2 E-05	10
9169.0136	P	111	7 5 3	7 1 6	704.214	1.3 E-06	10
9170.9812		012	4 3 2	3 2 1	212.158	2.12E-04	6
9171.2585	P	111	8 7 1	8 5 4	1255.166	1.4 E-06	10
9172.4602		111	7 7 1	7 5 2	1059.835	1.4 E-06	10
9172.7585	P	111	9 4 5	8 2 6	982.912	1.4 E-05	10
9172.9061		012	4 2 2	3 1 3	142.278	2.88E-05	6
9178.3429		012	8 7 2	8 6 3	1411.812	9.7 E-07	10
9178.3488		012	4 3 1	3 2 2	208.301	6.92E-05	6
9179.2628	B *	012	7 7 1	7 6 2	1218.189	1.5 E-06	50
9179.2628	B	012	7 7 0	7 6 1	1218.193	1.5 E-06	50
9180.1521	P	111	5 5 0	4 3 1	383.842	8.0 E-06	20
9181.1789		111	7 4 4	6 2 5	552.911	7.21E-05	6
9181.4791		111	5 5 1	4 3 2	382.516	2.31E-05	6
9182.8802	P	012	5 3 2	5 0 5	325.347	6.2 E-06	20
9186.9218		012	5 3 3	4 2 2	315.779	4.2 E-05	10
9191.7985		111	9 3 6	8 1 7	882.891	6.0 E-06	10
9192.9839		111	8 2 6	7 0 7	586.243	3.5 E-05	10
9197.7947		111	6 5 1	5 3 2	508.812	3.40E-05	6
9198.7363		012	6 3 4	5 2 3	448.910	8.27E-05	6
9202.4914		111	5 4 1	4 0 4	222.052	1.2 E-06	10
9202.8335		111	6 5 2	5 3 3	503.868	1.17E-05	6
9202.7597		111	10 4 6	9 2 7	1201.927	1.25E-05	6
9205.5352		012	4 4 1	3 3 0	285.418	2.35E-04	6
9205.7884		012	4 4 0	3 3 1	285.219	8.48E-05	6
9207.0382	B	012	7 3 5	6 2 4	802.773	1.0 E-05	20
9207.8854		012	5 3 2	4 2 3	300.382	1.18E-04	6
9211.7348		111	7 5 2	6 3 3	661.548	1.0 E-05	10
9212.3503		012	5 4 1	5 1 4	399.467	1.2 E-06	10
9212.9884	P	012	8 3 6	7 2 5	782.406	1.2 E-06	10
9213.9208		111	8 3 6	7 1 7	588.479	1.22E-05	6
9216.5756		111	8 4 5	7 2 6	709.606	1.53E-05	6
9216.8710	B	111	9 4 6	9 0 9	920.188	4.8 E-07	20
9217.1175	P	012	3 3 1	2 0 2	70.000	7.7 E-07	20
9218.1137	P	012	9 3 7	8 2 6	982.912	1.1 E-06	10
9219.8620		012	5 2 3	4 1 4	224.838	3.85E-05	6
9221.8859		111	8 5 3	7 3 4	842.358	2.18E-05	6
9223.8810	P	210	10 4 7	10 1 10	1114.949	3.9 E-07	20
9224.2488		111	7 5 3	6 3 4	648.878	3.13E-05	6
9224.8032	P	012	7 4 3	7 1 6	704.214	1.4 E-06	10
9227.6952		012	5 4 2	4 3 1	383.842	4.93E-05	6
9229.2923		012	5 4 1	4 3 2	382.810	1.46E-04	6
9229.6863		111	9 5 4	8 3 5	1060.197	4.2 E-06	10
9237.7975		111	10 5 5	9 3 6	1282.810	6.81E-05	6
9240.7086	P	031	8 7 1	7 5 2	1060.838	8.6 E-07	10
9241.5078	B	012	6 3 3	5 2 4	410.208	7.83E-05	6
9241.5078	B	111	10 3 7	9 1 8	1079.000	7.83E-05	6
9242.0987	P	111	8 4 5	8 0 8	328.367	4.43E-05	6
9248.3544	P	012	4 3 2	3 0 3	136.781	9.1 E-06	10
9247.1844	P	111	8 5 4	7 3 5	818.894	7.7 E-06	10
9247.4989		012	6 4 3	5 2 2	508.812	7.72E-05	6
9248.9119	P	111	9 2 7	8 0 8	744.064	3.1 E-06	10
9251.2391		111	9 4 6	8 2 7	885.600	2.00E-05	6
9253.5825		012	6 4 2	5 3 3	503.868	2.74E-05	6
9256.5638	P	210	7 5 2	7 0 7	586.243	5.1 E-07	50
9257.0917	B	012	5 5 1	4 4 0	468.134	1.3 E-04	50
9257.0917	B	012	5 5 0	4 4 1	468.107	1.3 E-04	50
9259.1344	P	210	10 4 7	9 1 8	1079.080	3.5 E-06	10
9260.8248	P	111	6 6 0	5 4 1	610.340	1.1 E-06	20
9260.9181		111	9 3 7	8 1 8	744.183	1.53E-05	6
9261.0483	P	111	6 6 1	5 4 2	610.113	5.7 E-07	20
9263.4351		012	7 4 4	6 3 3	661.548	1.30E-05	6
9269.6607	P	111	12 5 7	11 3 8	1813.223	6.0 E-07	10
9272.2582		111	9 5 5	8 3 6	1006.118	1.27E-05	6
9272.5579	P	012	8 2 6	5 1 5	328.825	7.7 E-06	20
9276.8482		012	8 4 5	7 3 4	842.358	1.49E-05	6
9280.0388		012	7 4 3	6 3 4	648.878	3.80E-05	6
9280.4074		111	7 6 2	6 4 3	758.724	2.0 E-06	10
9280.8487	P	012	5 3 3	4 0 4	222.052	2.7 E-06	10
9280.8187		012	6 5 2	5 4 1	610.340	7.20E-05	6
9281.0825		012	6 5 1	5 4 2	610.113	2.51E-05	6
9283.5861	P	012	7 3 4	6 2 5	552.911	1.06E-05	6
9289.8957		210	7 5 2	6 2 5	552.911	1.14E-05	6
9290.8141		111	7 4 3	6 0 6	446.697	8.1 E-07	10
9290.8074	B	111	10 4 7	9 2 8	1080.385	2.2 E-06	50
9295.7909		111	8 6 2	7 4 3	931.237	2.1 E-06	10
9297.5554	P	210	10 3 8	9 0 9	920.189	2.8 E-06	10
9299.4001	P	111	8 6 3	7 4 4	927.744	6.9 E-07	20
9299.9964		111	10 5 6	9 3 7	1216.232	1.4 E-06	10
9303.1347	P	012	7 5 3	6 4 2	757.780	1.28E-05	6
9304.3962		012	7 5 2	6 4 3	758.724	3.92E-05	6
9304.8209	P	111	10 2 8	9 0 9	920.189	2.8 E-06	10
9305.4429	B	012	6 6 1	5 5 0	742.076	5.97E-05	6
9305.4429	B	012	6 6 0	5 5 1	742.073	5.97E-05	6
9307.1484	P	111	6 5 1	5 1 4	399.457	6.8 E-07	10
9308.8122		111	10 3 8	9 1 9	920.211	1.6 E-06	10
9308.0491		012	6 4 3	6 1 6	447.252	1.1 E-06	10
9310.1983		111	10 6 4	9 4 5	1360.235	9.8 E-07	10
9310.4881		111	9 8 4	8 4 5	1122.709	1.9 E-06	10
9319.8980		012	6 3 4	5 0 5	325.347	9.63E-06	6
9323.1833		012	8 5 4	7 4 3	931.237	1.80E-05	6
9325.0920	P	012	7 8 2	6 5 1	888.832	6.0 E-06	20
9325.1258	P	012	7 6 1	6 5 2	888.598	1.2 E-05	20
9327.4567	P	012	8 5 3	7 4 4	927.744	6.69E-06	6
9328.9881		012	7 2 5	6 1 6	447.252	7.98E-06	6
9330.8082	P	111	11 5 7	10 3 8	1448.128	2.8 E-06	10
9332.6234	P	111	11 4 8	10 2 9	1293.834	3.6 E-06	10
9335.8898	P	012	8 3 5	7 2 6	703.908	1.8 E-06	10
9336.0400		012	5 4 2	4 1 3	275.497	8.3 E-07	10
9339.7109	P	012	9 5 5	8 4 4	1131.778	1.7 E-06	10
9343.8838	P	111	7 7 0	6 5 1	888.832	4.8 E-06	20
9343.8973	P	111	7 7 1	6 5 2	888.598	1.2 E-05	20
9344.2630	P	012	8 6 3	7 5 2	1059.835	4.3 E-06	10
9348.8501	P	111	8 4 4	7 0 7	588.243	1.1 E-06	20
9348.9096	B	012	9 4 5	8 3 6	1006.118	6.0 E-06	20
9350.3988	B	012	7 7 0	6 6 1	1048.087	1.83E-05	6
9350.3988	B	012	7 7 1	6 6 0	1048.058	1.83E-05	6
9351.1494		012	9 5 4	8 4 5	1122.709	7.81E-06	6
9353.0820	P	111	11 2 9	10 0 10	1114.533	8.7 E-07	20
9358.8508	B	012	6 4 3	5 1 4	399.457	4.7 E-06	50
9358.8508	B *	111	11 3 9	10 1 10	1114.949	4.7 E-06	50
9359.4718		111	11 6 6	10 4 7	1581.338	6.7 E-07	10
9360.0271		111	8 5 3	7 1 6	704.214	1.0 E-06	10
9362.7708	P	111	12 3 9	11 1 10	1524.849	6.7 E-07	20
9363.1152		012	7 3 5	6 0 6	446.697	1.4 E-06	10
9366.5925		111	8 7 1	7 5 2	1059.835	8.80E-06	6
9366.7867		111	8 7 2	7 5 3	1059.847	2.2 E-06	10
9371.7630	B	012	6 7 1	7 6 2	1218.189	7.14E-06	6
9371.7630	B	012	8 7 2	7 6 1	1218.193	7.14E-06	6
9382.0790	B	012	7 4 4	6 1 5	542.905	1.1 E-06	20
9386.8808	P	012	8 2 6	7 1 7	588.479	9.1 E-07	20
9388.7307		111	9 7 3	8 5 4	1255.188	3.2 E-06	10
9388.9686		012	9 3 6	8 2 7	889.000	1.8 E-06	10
9403.9689	P	111	12 2 10	11 0 11	1327.109	7.3 E-07	10
9407.2832		111	10 7 3	9 5 4	1477.297	1.3 E-06	10
9408.1788	P	012	8 3 6	7 0 7	588.243	3.2 E-06	10
9412.7898	P	012	8 4 5	7 1 6	704.214	4.0 E-06	10
9423.8898	B	111	8 8 1	7 6 2	1218.189	1.0 E-06	20
9423.8898	B	111	8 8 0	7 6 1	1218.193	1.0 E-06	20
9430.1107	P	111	11 7 5	10 5 6	1718.718	5.6 E-07	10
9440.2512	P	012	9 2 7	8 1 8	744.183	1.0 E-06	10
9447.4882	B	111	9 8 1	8 8 2	1411.845	7.3 E-07	20
9451.2128	P	111	13 3 11	12 1 12	1957.849	2.8 E-07	50
9458.8838	P	012	9 3 7	8 0 8	744.064	4.3 E-07	20
9470.8883	P	111	10 8 2	9 6 3	1631.384	3.1 E-07	50
9472.0887	P	012	8 5 4	7 2 5	782.400	4.8 E-07	20
9481.7647	P	012	7 4 3	6 1 6	447.252	3.1 E-07	50

NOTES: SIGMA: the observed position of the line in cm^{-1}. P: the line is perturbed by neighbouring lines or by the noise. B: the line is blended with another line (of $H_2{}^{16}O$ or another isotope); however, a line blended with another one stronger by a factor greater than 10 is not mentioned. Note that when a blending occurs, the total measured intensity is repeated for each line blended at the same wavenumber. An asterisk indicates a poor-quality line that is not used in the calculation of the energy levels. V": if this is set to 1, the lower vibrational level is (010); otherwise, the lower vibrational level is (000). VIB: the vibrational quantum numbers v_1', v_2', and v_3' of the upper level. J' KA' KC' J" KA", and KC": the rotational quantum numbers of the upper and lower levels respectively. E": the energy of the lower level in cm^{-1} (4.9). INTENSITY: the measured line intensity at 300 K expressed in $cm^{-2} \cdot atm^{-1}$. %: the uncertainty in the measured intensity (see text).

TABLE 5. Comparison of the line intensities measured in this work with those of other authors (intensities have been converted to 10^{-5} cm^{-2}·atm^{-1} at 300 K)

Line center (cm^{-1}) (this work)	Intensity calculated by Benedict (refs. 1, 2)	S_1^0 Measured intensity ±6% (this work)	S_2^0 Measured intensity ±10% (see refs. 6 and 7)	$R = S_1^0/S_2^0$ ($\bar{R} = 1.030 \pm 0.078$)
9207.8654	35.4	11.8	11.8[a]	1.000
			12.3[b]	0.959
9219.8520	14.4	3.85	3.53[c]	1.091
9221.8855	3.87	2.16	2.02[c]	1.069
9224.2465	5.53	3.13	2.82[c]	1.110
9227.6952	13.0	4.93	4.82[c]	1.023
9229.2923	40.3	14.6	12.8[c]	1.141
9237.7975	1.17	0.661	0.696[c]	0.950
9241.6079	1.32	0.783	0.689[c]	1.136
9242.8597	0.874	0.443	0.500[c]	0.886
9243.0742	6.11	1.67	1.60[c]	1.044
9251.2391	2.74	2.00	2.01[c]	0.995
9253.5825	7.09	2.74	2.69[c]	1.019
9260.9181	2.01	1.53	1.48[c]	1.034
9263.4351	2.40	1.30	1.31[c]	0.992
9272.2582	1.88	1.27	1.21[c]	1.050
9274.6482	2.30	1.49	1.50[c]	0.993
9280.0388	10.2	3.80	3.90[c]	0.974
9280.8167	18.8	7.20	8.27[c]	0.871
9281.0825	6.31	2.51	2.38[c]	1.055
9283.5661	8.40	1.06	1.04[c]	1.019
9289.8957		1.14	1.05[c]	1.086
9303.1347	2.82	1.28	1.30[c]	0.985
9304.3962	8.81	3.92	3.94[c]	0.995
9305.4429	18.9	5.97	6.35[c]	0.940
9319.8980	3.40	0.963	1.08[c]	0.892
9323.1833	3.21	1.80	1.82[c]	0.989
9327.4567	1.22	0.669	0.586[c]	1.142
9328.9881	3.63	0.796	0.785[c]	1.014
9350.3986	5.63	1.83	1.61[c]	1.137
9351.1494	1.40	0.781	0.730[c]	1.070
9366.5925	0.434	0.880	0.778[c]	1.131
9371.7630	2.35	0.714	0.597[c]	1.196

[a]Value obtained by Brault *et al.* (6) from a measurement performed at 296 K.
[b]Value obtained by Brault *et al.* (6) from a measurement performed at 297 K.
[c]Value measured by Cherepanov *et al.* (7).

To assess the validity of such a method, we have made several tests (12).

(i) Equation [1] is valid only for infinite resolution, but taking into account the range of values of γ^D, γ^L, and the resolution limit, we have checked that it was always possible to use an effective constant α with very good accuracy (standard deviations from 2 to 4.5% depending on the spectrum). In particular, it should be noted that we did not detect any systematic deviation related to either the line depth or the wavenumber.

(ii) From [1], α can be related to known quantities

$$[4] \quad \alpha = \beta(\sigma_0\, xPl/\gamma^D)\,(\log 2/\pi)^{1/2} k[0, (\log 2)^{1/2}\gamma^L/\gamma^D]$$

the constant β (slightly less than unity) being introduced to take into account the effect of the apparatus function. For similar resolutions, the value of β should not depend upon the quantities appearing in [4]. We have checked that this is true for a wide variety of spectra, since we find the value of β to be remarkably constant: $\bar{\beta} = 0.96 \pm 0.02$.

(iii) As already mentioned, several precautions have to be taken to measure the $H_2{}^{16}O$ line intensities, especially because of traces of atmospheric water vapor along the optical path. Indeed, intensity measurements of very strong lines need low optical-thickness spectra, where the atmospheric absorption is not negligible. Then, the atmospheric Lorentzian part of the absorption profile may become important so that [1], which describes the absorption caused by just the gas being present in the cell, is no longer valid. In fact, using as tests similar spectra of the second triad of $H_2{}^{16}O$ for which an extensive set of accurately calculated intensities is available (13), we have found that the method could still be used for the range of line depth and optical-thickness values we encountered in this work. (However, once the Lorentzian contribution has been removed, we have effectively found the same value of β that was mentioned above. This is additional proof of the significance of the method.)

(iv) Finally, the comparison of the deduced intensity values for the same line, from various records, shows a good agreement.

To conclude, this method appears to be significant and easy to use. The uncertainty in the obtained intensities is mainly due to the uncertainty in the depth of the lines concerned, which are all, more or less, perturbed by neighbouring lines (this is why the equivalent-width method could not be used for these lines).

These intensities are listed in Table 4. The reported uncertainties are estimated as follows. For "good" lines, the uncertainty can be between 6 and 15%, and a mean value 10% is mentioned. For purturbed lines, the uncertainty is in the range 15–25%, and a mean value of 20% is given. For strong overlappings, a mean uncertainty of 50% is given. (When blending occurs, only the total intensity can be measured and this is repeated for each line located at the same wavenumber: in this case, the stated uncertainty concerns the whole intensity, and is not the uncertainty of each blended line.)

4. Conclusions

Using Fourier-transform spectra of water between 8000 and 9500 cm^{-1}, we have obtained an extensive set of accurate rotational energy levels for the second hexad of interacting states of $H_2{}^{16}O$. We have measured the intensities of all the observable lines; their uncertainty varies from 6 to 50%, depending upon the line, with a mean value of 10%. This extensive set of line positions and intensities gives a quasi-complete picture of the absorption of $H_2{}^{16}O$ at room temperature in the studied spectral region.

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[4]

$H_2{}^{16}O$: Line positions and intensities between 9500 and 11500 cm^{-1}. The interacting vibrational states (041), (220), (121), (022), (300), (201), (102), and (003)

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Résumé

Des spectres par transformée de Fourier de la vapeur d'eau (résolution: 0.015 cm^{-1}) ont été analysés entre 9500 et 11500 cm^{-1}. Les valeurs précises de 557 niveaux d'énergie rotationnels appartenant aux états vibrationnels interagissants (041), (220), (121), (022), (300), (201), (102), et (003) de la première décade d'$H_2{}^{16}O$, ont été déterminées. De plus, on a mesuré avec précision les intensités de 718 raies (incertitude: 7%). Dans le but d'augmenter le nombre d'intensités expérimentales (nécessaires pour les applications atmosphériques), une méthode plus rapide utilisant les profondeurs mesurées des raies, a permis d'obtenir 1695 intensités supplémentaires, avec une incertitude moyenne d'environ 15% .

Abstract

Water vapor Fourier-transform spectra (resolution: 0.015 cm^{-1}) have been analyzed between 9500 and 11500 cm^{-1}. Accurate values of 557 rotational energy levels, belonging to the interacting vibrational states (041), (220), (121), (022), (300), (201), (102),and (003) of the first decad of $H_2{}^{16}O$, have been determined. Moreover, 718 line intensities have been accurately measured (uncertainty: 7%). In order to increase the number of experimental intensities (needed by atmospheric applications), a faster method, using the measured line depths, has led to the obtention of 1695 additional intensities, with an average uncertainty of about 15% .

1. Introduction

This paper is the continuation of our previous works about the water molecule (1,2), the absorption of which plays a major role in atmospheric applications or in radiative transfer studies. After the analysis of the $H_2{}^{16}O$ spectrum between 8000 and 9500 cm^{-1} (1), we present here the 9500– to 11500 cm^{-1} spectral region for the same molecule. This region was first studied by Benedict (3) working on the solar spectra of Delbouille and Roland (3) (resolution: between 0.10 and 0.05 cm^{-1} depending upon the wavelength); later on, these results were introduced in the atmospheric compilation (4), with some modifications.

We had already studied this spectral region, but for the $H_2{}^{18}O$ isotopic species (2). So, in order to have a more complete picture of the water vapor absorption in this region and to improve the accuracy of the previous results, we have studied several spectra (resolution: 0.015 cm^{-1}) recorded with the Fourier–transform spectrometer built by Brault (5). The analysis of these spectra has led to the determination of 557 accurate rotational energy levels for the interacting vibrational states (041), (220), (121), (022), (300), (201), (102), and (003), which belong to the first decad of H_2O.

In the spectral region we delt with, the knowledge of experimental intensities is very incomplete. The atmospheric data base (4) gives some values, but they were obtained by Benedict from the equivalent widths measured in solar spectra, so, most of them are known with large uncertainties. Latter on, Giver et al. (6) measured accurate intensities for 97 lines between 10400 and 10750 cm^{-1}. To extend this set of data, we used the equivalent width method to measure 718 intensities of well isolated lines (uncertainty: 7%). Besides, in order to provide a complete list of reliable individual line intensities, we used the faster central depth method already described (1), to obtain the intensities of all the remaining lines: thus, 1695 additional intensities have been measured with an average uncertainty of about 15% .

2. Experimental details and analysis

The experimental details and the data reduction procedure have already been discussed (1,2,) so, we give here only the details relevant to the present study. The ^{18}O-enriched, ^{17}O-enriched, and natural water vapor spectra were recorded at the National Solar Observatory (Kitt Peak, AZ), with the Brault's Fourier-transform apparatus (5). The experimental conditions and the characteristics of these spectra are gathered in Table 1. Figure 1 is a representative portion of the spectrum which shows clearly the quality of the signal-to-noise-ratio.

As already said in the case of $H_2{}^{18}O$ (2), 10 resonating vibrational states are involved in the studied spectral region: they form the so-called first decad of the water molecule, i.e., the polyad of interacting states {(060), (140), (041), (220), (121), (022), (300), (201), (102), (003)}. Among the 10 corresponding cold bands, the $\nu_1+4\nu_2$ band is so weak that it could not be observed, even in our long absorption path spectra. Also, it is interesting to notice that, owing to a few resonant levels, we could observe the very weak $2\nu_2+2\nu_3$ band, whereas it was unobservable for $H_2{}^{18}O$ (2), because the optical thickness of $H_2{}^{18}O$ was too small. Let us recall also that the $6\nu_2$ band absorbs around 8600 cm^{-1}, and is visible only through the resonating level (060)|616| (1,7). On the whole, the 8 following bands were analyzed: $4\nu_2+\nu_3$, $2\nu_1+2\nu_2$, $\nu_1+2\nu_2+\nu_3$, $2\nu_2+2\nu_3$, $3\nu_1$, $2\nu_1+\nu_3$, $\nu_1+2\nu_3$, and $3\nu_3$.

Accurate energy values were known only for a few levels of the (121) vibrational state, from some lines of the $\nu_1+2\nu_2+\nu_3-\nu_2$ hot band observed in the 8000- to 9500 cm^{-1} region (1). Nevertheless, a good starting point for the analysis of the spectra was provided by the energy levels of Benedict (3); and, except for a few cases, our values confirm and improve the energy levels that Benedict primarily observed or predicted, despite the low resolution of the spectra he had at his disposal.

The resonances are numerous, some of them involving simultaneously more than two levels. In particular, almost half of the very close (300) and (201)

rotational levels interact with each other, or with levels of other vibrational states. A typical example is given by the levels (201)|808| at 11317.2562 cm^{-1}, and (121)|826| at 11322.4512 cm^{-1}. We had already pointed out this resonance in the case of $H_2{}^{18}O$ (2), and it is particularly interesting to note the differences that appear between the two isotopic molecules $H_2{}^{16}O$ and $H_2{}^{18}O$. As one can see on Fig. 2, the relative positions of the resonant levels are different for the two molecules: for $H_2{}^{16}O$, (201)|808| is about 5.2 cm^{-1} below (121)|826|, whereas it is only about 3.6 cm^{-1} above for $H_2{}^{18}O$. This means a stronger interaction for $H_2{}^{18}O$ than for $H_2{}^{16}O$. Indeed, the two levels (201)|808| and (201)|818|, which should be quasi-degenerated in the unperturbed scheme because they form a doublet, are actually well separated, i.e., by about 1.2 cm^{-1} for $H_2{}^{18}O$, but only by 0.6 cm^{-1} for $H_2{}^{16}O$. Furthermore, as (121)|826| is above (201)|808| for $H_2{}^{16}O$, this level is shifted downwards with respect to (201)|818|, whereas it is shifted upwards for $H_2{}^{18}O$. Such differences in the positions of the levels give rise to different spectra: see Fig. 1, which should be compared with Fig. 1 of ref. 2. This discussion shows that the effect of the interactions cannot be simply transposed from one isotope to another (see also ref. 8).

Another interesting example of strong difference between the spectra of the two isotopes concerns the K_c doublet-levels (121)|909| and (121)|919|, which are separated by more than 1.8 cm^{-1} for $H_2{}^{16}O$, but which are very close to each other for $H_2{}^{18}O$. This is because of a strong Fermi-interaction between the levels (121)|919| and (041)|937| of $H_2{}^{16}O$, whereas this resonance does not exist in the case of the $H_2{}^{18}O$ molecule (see Table 3 of ref. 2): indeed, the level (041)|937| of $H_2{}^{18}O$ is located so that no strong interaction occurs, and it cannot be observed for this reason. Such a fact is not surprising since the structure of the rotational levels of the (041) vibrational state is subject to a noticeable change with the isotopic substitution, because of the large value of the v_2-quantum number.

A comment can be made about the |000| rotational levels which, of course, are obtained by only one transition. Though this transition generally gives rise to a weak line, it can be easily identified using sum rules (9,10). For example, the following relation gives an approximate value of the energy E|000| without any diagonalisation of the hamiltonian matrix:

$$|1| \quad E|000| = (9/5)\, E|101| + \{ E|221| - E|202| - E|220| \} + \ldots$$
$$\ldots + (1/5) \{ E|303| + E|321| - E|322| \} .$$

This very simple formula is interesting. First, it only needs to know the energy of 7 levels. And second, when these levels are non resonant, it provides a very good approximation of E|000|: indeed, the predicted value is correct (10) within an error of 144 times the H_J constant of the Watson-Hamiltonian (11,12) and with an uncertainty of 5.4 times the mean uncertainty on the experimental energy levels; this leads to an overall error on the estimation of the E|000| of about 3×10^{-3} cm^{-1}. This formula allowed to search the corresponding line and to find it without ambiguity. This is even possible when some of the levels involved in |1| are resonant, [as for the (220) and (201) states].

A similar problem of assignment arises for some doublet-levels of high J-value with K_a equal 0 or 1. Usually, these levels are obtained from only one doublet-line but, since such lines appear as series (12,10), it is rather easy to perform the assignment. Furthermore, they are recognizable in N_2-broadened spectra (not mentioned in Table 1), since this type of transitions give rise to very narrow lines, as it was already observed between 8500 and 9500 cm^{-1} (15).(The measurement of N_2-broadening coefficients of lines between 9500 and 11500 cm^{-1} is in progress.)

3. Results

3.1. Line positions and energy levels

The experimental positions of the 2413 assigned lines, between 9500 and 11500 cm^{-1}, are listed in Table 2. From them, 557 rotational energy levels have been determined. These energy levels are reported in Table 3, together with their uncertainty and with the number of observed transitions involving each level.

The absolute wavenumbers of Tables 2 and 3 have been obtained through a careful calibration procedure (10,14), and their comparison with previous values (3) desterves some discussion. First, it is important to recall that the results of Benedict (3), which have been reported in the 1986 HITRAN data base (4), come from solar spectra and are therefore air-shifted wavenumbers. The few experimental values of air-shift coefficients of H_2O lines which have been published (see, e.g., refs. 6,16,17, and references therein), show that this air-shift is not negligible since it ranges between -3×10^{-3} and -40×10^{-3} $cm^{-1}.atm^{-1}$. Thus, the HITRAN wavenumbers for the concerned spectral regions can be underestimated by a similar amount. In fact, we have noted that the HITRAN wavenumbers are on the average lower than ours, which are free from air-shift since they are measured on pure H_2O spectra. The self-shift could play a role but, although only two measured values of the selft-shift have been published (18,19) to our knowledge, one can reasonably think that this shift is negligible in our spectra, because of their low H_2O pressure (see Table 1).

For the same reason, we have also observed a discrepancy between the wavenumbers of refs. 20,21 and those of the HITRAN data base. Such differences could have troublesome conquences, especially for lidar applications. To cope with this problem, N_2-shift measurements are in progress (10), using some other spectra we had recorded at the National Solar Observatory, with half an atmosphere of N_2.

3.2. Line intensities

Using the curve of growth method, we have measured the intensities of 718 well isolated lines. They are reported in Table 2 and their average uncertainty is 6% (as far as absolute values of intensities are concerned, the uncertainty to take into account is 7% : see refs. 14, 22, 23).

Since 53 of these intensities had already been measured by Giver et al. (6) (resolution: 0.045 cm^{-1}, and average uncertainty: 3.3% for the concerned lines), comparisons were made between their results and ours (see Table 4). The average ratio of the two intensities is: $\tilde{R} = 0.960 \pm 0.077$; this good agreement prooves the consistency of these two independant sets of results.

To complete the list of intensities obtained above, we have used the central depth method detailed in ref. 1. The additional intensities thus measured are listed in Table 2. For not too perturbed lines, the uncertainty lies between 6 and 15% . For perturbed lines, the uncertainty ranges from 15 to 25% ,and a value of 20% is given. For strong overlappings, or for very weak lines, the uncertainty can be more important and a mean value 50% is reported. When close blendings occur, only the total intensity can be measured and is repeated for each line located at the same wavenumber.

Since we wanted to make precise comparisons between the intensities measured by different authors, Table 4 contains only our most accurate intensities, i.e., those having a 6% uncertainty. But it is interesting to notice that the comparison of the intensities of 41 other less precise lines, that we obtained by the central depth method, with the corresponding intensities of Giver et al. (6) gives rise to the same value of the average ratio $\tilde{R}$. This shows again the coherence of the method and of its results.

4. Conclusion

Using water vapor Fourier-transform spectra recorded between 9500 and 11500 cm^{-1}, we have obtained an extensive set of accurate rotational energy levels for eight interacting vibrational states belonging to the first decad of $H_2{}^{16}O$. We have measured the intensities of all the observable lines, their uncertainty ranging from 6 to 50% depending upon the line, with an average value of 15% . This extensive set of line positions and intensities greatly improve upon the previous results, as far as the accuracy and the coverage are concerned.

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FIG. 1. Portion of a ^{17}O-enriched spectrum used in this work. The plotted spectrum is a part of the spectrum number 5 (see Table 1), which has been apodized. The lines marked with a triangle are due to $H_2{}^{16}O$ (see Table 2). Those marked with a black circle are due to $H_2{}^{18}O$ (see ref. 2). The line marked with a diamond belongs to $H_2{}^{17}O$. The $H_2{}^{16}O$ transitions, the assignment of which is mentioned, illustrate the strong Fermi-resonance between the levels (121)|826| and (201)|808|. This interaction has the same qualitative effects as for $H_2{}^{18}O$ (see Fig. 1 of ref. 2), except that the relative line positions are reversed, because of the differences in the structure of the $H_2{}^{16}O$ and $H_2{}^{18}O$ levels (see Fig. 2).

FIG. 2. Comparison of the relative positions of the energy levels of $H_2{}^{16}O$ and $H_2{}^{18}O$, in the case of the Fermi–resonance between |121⟩|826⟩ and |201⟩|808⟩. The level |201⟩|818⟩ is not perturbed. The approximate position of the level |201⟩|808⟩ in the absence of interaction is indicated by dots. The mentioned energies are in cm^{-1}. (See Sect. 2 for discussion.)

TABLE 1. Experimental conditions and characteristics of the absorption spectra (1 atm = 1013 hPa). Common characteristics: studied spectral region, 9500–11500 cm^{-1}; signal–to–noise ratio, 500–1000; cell temperature, 300 ± 0.5 K; average Doppler half–width, 0.015 cm^{-1}.

TABLE 2. List of experimental line positions and intensities for the bands of $H_2{}^{16}O$ observed between 9500 and 11500 cm^{-1} at 300 K

NOTES: SIGMA: observed position of the line in cm^{-1}. P: the line is perturbed by neighbouring lines or by the noise. B: the line is blended with another line (of $H_2{}^{16}O$ or of another isotope); however, a line blended with another one stronger by a factor larger than 10 is not mentioned; note that, when a blending occurs, the total measured intensity is repeated for each line blended at the same wavenumber. An asterisk indicates a poor quality line which has not been used in the calculation of the energy levels. VIB: vibrational quantum numbers v_1', v_2', v_3' of the upper level. The lower vibrational level is the fundamental (000). J' KA' KC' J" KA" KC": rotational quantum numbers of the upper and lower levels respectively. E": energy of the lower level in cm^{-1}. INTENSITY: measured line intensity at 300 K expressed in $cm^{-2}.atm^{-1}$. %: uncertainty in the measured intensity (see text, Sect. 3.2).

TABLE 3. Experimental rotational energy levels for the observed vibrational states of the first decad of $H_2{}^{16}O$

NOTES: E: experimental energy in cm^{-1}. DELTA.E: uncertainty in the energy value, equal to one standard deviation in units of 10^{-3} cm^{-1}. N: number of observed lines arriving at the corresponding level. Let us recall that the resonant level (060)|616| at 9400.6413 cm^{-1} $\pm$ 0.41 x 10^{-3} cm^{-1}, has been observed by 7 lines in the second hexad region (1,7).

TABLE 4. Comparison of line intensities measured in this work with those of Giver et. al. (6)

NOTES: SIGMA: line center in cm^{-1}, from this work. S01: intensity measured by Giver et. al. (6), converted to $cm^{-2}.atm^{-1}$ at 300 K (average uncertainty: 3.3% ; but, as far as absolute intensities are concerned, this uncertainty should be slightly increased: see ref. 15). S02: intensity measured in this work (uncertainty: 7%). R: ratio S02/S01, with $\overline{R} = 0.960 \pm 0.077$ for the 53 lines. See Table 2 for the other notations.

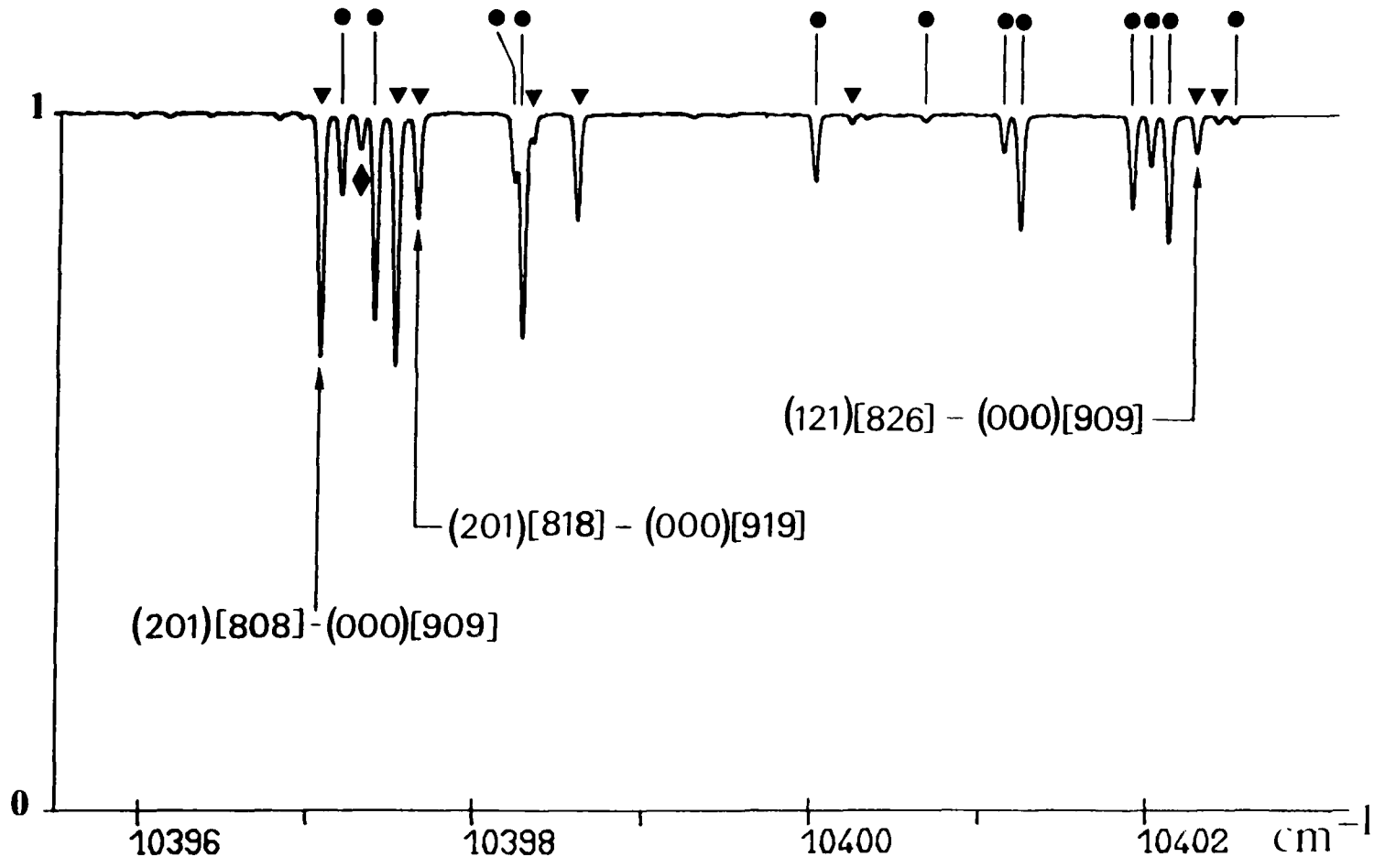

FIG. 1 Can. J. Phys. J.-P. CHEVILLARD ET AL.

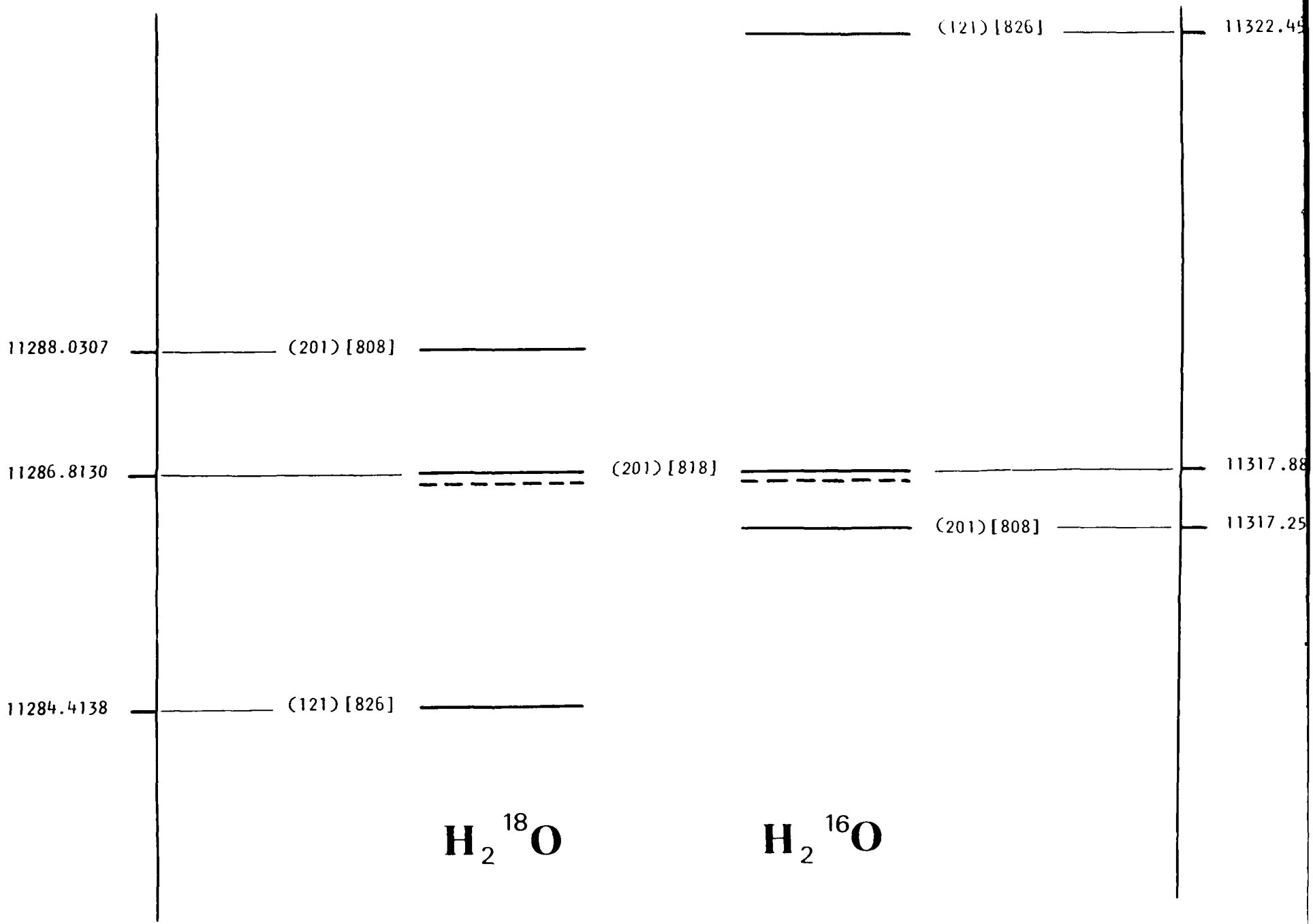

FIG. 2 Can. J. Phys. CHEVILLARD et al.

Type of spectrum	Spectrum number	Unapodized resolution (10^{-3} cm^{-1})	Total pressure P ± 1% (10^{-3} atm)	Average Lorentz half-width (10^{-3} cm^{-1})	Absorption path ℓ (cm)	$H_2{}^{16}O$ Concentration x	$H_2{}^{16}O$ Optical thickness x P ℓ (cm.atm)
Natural	1	17	1.97	0.7	43 396	0.997	85.2
	2	17	22.8	8.0	43 396	0.997	986
^{18}O enriched	3	13	3.68	1.3	4 900	0.27 ± 0.01	4.87
	4	13	3.58	1.3	43 396	0.27 ± 0.01	42.0
^{7}O enriched	5	13	6.25	2.2	4 900	0.79 ± 0.03	24.2
	6	13	6.25	2.2	43 396	0.79 ± 0.03	214

TABLE I Can. J. Phys. J.-P. CHEVILLARD ET AL.

9603.7498	P	041	10	0	10	11	0	11	1327.109	5.7 E-07	50	9824.8298		121	8	1	7	9	3	6	1282.919	9.1 E-07	20
9610.4802	P	041	4	0	4	5	2	3	448.810	4.8 E-07	20	9828.1188		041	4	1	4	3	1	3	142.278	6.4 E-06	15
9828.2776	P	041	9	0	9	10	0	10	1114.533	3.5 E-07	50	9829.7020	P	041	5	2	3	5	2	4	416.208	9.1 E-07	20
9829.1021	P	041	9	1	9	10	1	10	1114.548	8.8 E-07	20	9829.7627	P	041	6	3	3	7	1	6	704.214	8.8 E-07	50
9851.7870		041	8	0	8	9	0	9	920.189	1.7 E-06	15	9933.8412		041	3	1	2	2	1	1	95.175	5.5 E-06	15
9853.3891	P	041	8	1	8	9	1	9	920.211	7.0 E-07	50	9933.9007	P	220	8	1	8	7	2	5	782.409	4.1 E-07	50
9854.9752	P	041	3	0	3	4	2	2	315.779	3.1 E-07	20	9935.5638	P	041	5	1	4	5	1	5	328.825	4.1 E-07	50
9874.0397	B	041	7	0	7	8	0	8	744.064	1.1 E-06	50	9936.2137	P	121	7	3	4	8	5	3	1255.912	3.8 E-07	50
9878.8808	B	041	7	1	7	8	1	8	744.183	3.5 E-06	20	9938.6035		041	5	0	5	4	0	4	222.052	5.4 E-06	15
9891.3380	B	041	2	0	2	3	2	1	212.158	5.7 E-07	50	9942.6916	B	300	8	1	8	9	4	5	1380.235	3.2 E-07	50
9891.8840	P	041	8	1	7	9	1	8	1079.080	8.9 E-07	20	9944.2207		041	5	1	5	4	1	4	224.838	1.78E-05	6
9894.8138		041	8	0	8	7	0	7	586.243	6.4 E-06	15	9945.3511	P	121	8	1	8	7	3	5	816.894	8.3 E-07	20
9899.8583		041	8	1	8	7	1	7	586.479	2.0 E-06	15	9945.6117	P	121	8	3	4	7	5	3	1089.847	4.1 E-07	50
9899.8837	P	041	7	1	8	8	1	7	882.891	5.7 E-07	50	9949.2178		041	4	4	0	5	4	1	610.340	3.8 E-08	15
9902.4804	P	041	7	2	5	8	2	6	982.912	6.2 E-07	20	9949.4249		041	4	4	1	5	4	2	610.113	1.3 E-06	20
9906.3598		041	8	1	5	7	1	6	704.214	2.9 E-06	15	9949.7781	P	041	6	2	4	6	2	5	552.911	1.1 E-06	20
9913.8371	P	041	8	2	7	9	2	8	1080.385	3.5 E-07	50	9949.8298	P	220	8	3	8	9	4	5	1380.235	1.1 E-06	20
9913.9592		041	5	0	5	6	0	6	448.897	2.8 E-06	15	9950.2572	P	220	5	0	5	6	3	4	648.978	2.7 E-07	50
9916.8331	P	041	7	1	7	7	1	6	704.214	3.1 E-07	50	9951.2509	P	121	5	4	2	6	8	1	1045.057	5.9 E-07	20
9919.2829		041	5	1	4	6	1	5	542.905	1.7 E-06	15	9955.7068		041	6	0	6	5	0	5	325.347	1.30E-05	6
9920.2761		041	6	2	4	7	2	5	782.408	2.1 E-06	15	9956.3994	B	121	6	3	3	7	5	2	1058.835	1.2 E-06	50
9921.8073		041	5	1	5	6	1	6	447.252	8.52E-06	6	9959.5085		041	6	1	6	5	1	5	326.825	4.2 E-06	15
9928.1378	P	041	8	0	8	6	2	5	552.811	2.8 E-07	50	9960.2953		041	4	1	3	3	1	2	173.365	1.75E-05	6
9930.5242		041	7	2	6	8	2	7	885.600	2.1 E-06	15	9960.5661	B	121	8	2	5	7	4	4	927.744	1.0 E-06	50
9731.6404		041	4	0	4	5	0	5	325.347	1.32E-05	6	9963.8894	P	041	4	3	1	5	1	4	399.457	5.9 E-07	20
9734.2030		041	4	1	3	5	1	4	399.457	8.4 E-06	15	9965.3195	P	041	8	1	5	6	1	6	447.252	5.9 E-07	50
9743.1342		041	5	2	3	6	2	4	602.773	1.4 E-06	15	9971.4052		041	7	0	7	6	0	6	446.697	3.0 E-06	15
9743.7707		041	4	1	4	5	1	5	328.825	4.2 E-06	15	9973.7913		041	7	1	7	6	1	6	447.252	1.03E-05	6
9748.4542	P	041	6	2	5	7	2	6	709.608	1.4 E-06	15	9974.6156		041	5	3	3	5	3	2	508.812	5.8 E-06	15
9748.7006		041	3	0	3	4	0	4	222.052	4.6 E-06	15	9975.0726	B	121	5	3	3	6	5	2	888.598	1.7 E-06	50
9753.3199		041	3	1	2	4	1	3	275.497	3.7 E-06	15	9975.1181	P	201	8	5	3	9	7	2	1810.588	5.4 E-07	50
9756.6244		041	4	0	4	4	2	3	300.362	1.5 E-06	15	9975.6390		041	3	2	2	2	2	1	134.902	1.1 E-05	15
9764.4582	P	041	3	0	3	3	2	2	208.301	2.2 E-07	50	9978.6360	B	041	3	2	1	2	2	0	138.163	8.4 E-08	15
9765.5615		041	3	1	3	4	1	4	224.838	1.54E-05	6	9978.8380	B	121	6	0	6	7	2	5	782.409	8.4 E-06	15
9766.7300		041	2	0	2	3	0	3	136.781	1.60E-05	6	9978.7267	P	041	4	3	2	4	3	1	383.842	4.6 E-06	15
9767.6775		041	5	2	4	6	2	5	552.911	6.2 E-06	15	9979.1144		121	5	3	2	6	5	1	888.632	6.8 E-07	20
9767.7241	B	121	9	1	9	10	3	8	1446.128	7.1 E-07	50	9980.4018		041	3	3	1	3	3	0	285.418	2.89E-05	6
9769.6071	B	041	5	1	5	5	1	4	399.457	9.4 E-07	50	9980.6082	P	041	4	3	1	4	3	2	382.516	1.4 E-05	10
9769.9511		041	4	2	2	5	2	3	446.510	7.7 E-06	15	9980.6829	P	041	3	3	0	3	3	1	285.219	9.1 E-06	10
9775.7117		041	2	1	1	3	1	2	173.365	1.44E-05	6	9981.5767		041	5	3	2	5	3	3	503.968	2.1 E-06	15
9787.1073	P	041	1	0	1	2	0	2	70.090	5.0 E-08	15	9982.4384		041	4	2	3	4	0	4	222.052	4.5 E-07	20
9787.4339		041	2	1	2	3	1	3	142.278	5.2 E-06	15	9984.7190		121	7	2	5	8	4	4	1131.778	1.2 E-06	15
9788.2834		041	4	2	3	5	2	4	416.208	3.0 E-06	15	9984.9984	P	041	6	3	3	6	3	4	648.978	2.7 E-06	15
9791.6212	B	041	6	3	3	7	3	4	842.356	1.9 E-06	20	9985.7119		041	8	0	8	7	0	7	586.243	5.6 E-06	15
9794.8994	P	041	4	1	4	4	1	3	275.497	5.8 E-07	20	9986.6927		041	5	1	4	4	1	3	275.497	4.1 E-06	15
9799.0192		041	3	2	1	4	2	2	315.779	3.2 E-06	15	9987.1214		041	8	1	8	7	1	7	586.479	1.9 E-06	15
9800.1545		041	1	1	0	2	1	1	95.175	4.2 E-06	15	9995.2420		041	5	2	4	5	0	5	325.347	1.0 E-06	15
9809.3989		041	1	1	1	2	1	2	79.495	1.18E-05	6	9997.8021		121	5	1	5	6	3	4	648.978	3.8 E-06	15
9809.7902		041	0	0	0	1	0	1	23.794	9.82E-06	6	9998.0308		121	5	2	4	6	4	3	756.724	4.9 E-06	15
9810.1778		041	3	2	2	4	2	3	300.362	1.14E-05	6	9998.1913		041	4	2	3	3	2	2	208.301	5.2 E-06	15
9817.0344		041	3	1	3	3	1	2	173.365	2.8 E-06	15	9998.4942	P	220	5	1	5	6	2	4	602.773	3.2 E-07	50
9823.9982		041	5	3	2	6	3	3	661.548	1.4 E-06	15	9998.7441	P	041	9	0	9	8	0	8	744.064	1.1 E-06	20
9828.1462		041	2	2	0	3	2	1	212.158	8.5 E-06	15	9999.4900		041	9	1	9	8	1	8	744.163	3.3 E-06	15
9828.9077	P	121	8	1	8	9	3	7	1216.232	3.1 E-07	50	10001.8689	P	201	10	4	8	11	8	5	2144.047	2.3 E-07	50
9833.1184		041	2	2	1	3	2	2	208.301	3.2 E-08	15	10003.0685		121	4	3	2	5	5	1	742.073	5.5 E-07	15
9833.7115	P	041	7	2	6	7	2	5	782.409	3.1 E-07	50	10004.0704		121	4	3	1	5	5	0	742.076	1.5 E-06	15
9834.4495	P	041	5	3	3	6	3	4	648.978	4.5 E-06	15	10004.3081		041	4	2	2	3	2	1	212.158	1.40E-05	6
9834.5371	P	041	2	1	2	2	1	1	95.175	2.1 E-06	15	10006.6526	P	201	7	5	3	8	7	2	1590.690	7.8 E-07	20
9843.4661	P	121	8	0	8	9	2	7	1201.921	3.6 E-07	50	10007.0171	P	201	7	5	2	8	7	1	1590.690	2.7 E-07	50
9846.5215		041	1	1	1	1	1	0	42.371	1.45E-05	6	10008.3107		121	6	2	4	7	4	3	931.237	4.9 E-06	15
9854.3125		041	4	3	1	5	3	2	508.812	6.0 E-06	15	10010.6875		041	10	0	10	9	0	9	920.189	1.7 E-06	15
9855.2870	P	041	6	2	5	6	2	4	602.773	3.1 E-07	50	10013.1167		041	6	1	5	5	1	4	399.457	8.2 E-06	15
9857.1976		041	1	0	1	0	0	0	0.000	3.2 E-06	15	10020.2270		041	5	2	4	4	2	3	300.362	1.38E-05	6
9858.1924		041	1	1	0	1	1	1	37.136	4.4 E-06	15	10022.6863	B	041	5	5	0	6	5	1	888.632	2.2 E-06	50
9858.8017		041	4	3	2	5	3	3	503.968	2.2 E-06	15	10022.6863	B	041	5	5	1	6	5	2	888.598	2.2 E-06	50
9869.5804		041	2	1	1	2	1	2	79.495	6.0 E-06	15	10026.8006	P	041	8	1	7	8	1	8	744.163	2.3 E-07	50
9873.0152	P	121	8	2	7	9	4	6	1340.885	2.2 E-07	50	10027.8737		121	5	2	3	6	4	2	757.780	2.0 E-06	15
9874.0786		041	5	2	4	5	2	3	446.510	2.1 E-06	15	10028.3617	P	102	8	5	4	9	8	1	2009.804	2.7 E-07	50
9879.6871		041	2	0	2	1	0	1	23.794	1.81E-05	6	10029.8795	P	041	7	2	8	7	0	7	586.243	5.0 E-07	50
9882.0599		041	3	3	0	4	3	1	383.842	2.2 E-06	15	10029.9948		121	6	1	5	7	3	4	842.356	6.9 E-06	15
9883.3041		041	3	3	1	4	3	2	382.516	6.5 E-06	15	10030.1282	P	041	5	2	3	4	2	2	315.779	3.7 E-06	15
9886.5392	B	041	3	1	2	3	1	3	142.278	1.1 E-06	50	10031.5757		121	4	2	3	5	4	2	610.113	1.6 E-06	15
9888.7101	B	041	4	2	3	4	2	2	315.779	2.4 E-06	15	10031.9500	P	300	9	1	9	10	2	8	1437.989	2.9 E-07	50
9888.7101	B	121	7	1	7	8	3	6	1008.118	2.4 E-06	15	10032.8086	P	300	8	7	2	9	8	1	2009.804	6.4 E-07	50
9891.1148	P	041	4	2	2	5	0	5	325.347	1.0 E-06	20	10035.4136	P	201	8	4	5	9	6	4	1631.251	4.1 E-07	50
9892.5760		041	2	1	2	1	1	1	37.136	4.2 E-06	15	10036.1780	P	041	5	3	3	6	1	6	447.252	4.6 E-07	20
9892.7454	P	041	3	2	1	4	0	4	222.052	3.6 E-07	50	10038.9331	P	201	6	5	2	7	7	1	1394.813	3.7 E-07	20
9895.1781	P	121	7	4	4	8	6	3	1411.812	4.0 E-07	50	10039.0283	P	201	6	5	1	7	7	0	1394.813	1.1 E-06	20
9895.7903		041	6	4	2	7	4	3	931.237	1.9 E-06	15	10039.4058		300	9	1	8	10	4	7	1581.338	5.9 E-07	15
9898.3844		041	3	2	2	3	2	1	212.158	1.20E-05	6	10039.8870		041	7	1	6	8	1	9	542.905	1.8 E-08	15
9900.8825		041	3	0	3	2	0	2	70.090	6.3 E-06	15	10040.4482		121	11	1	11	12	1	12	1557.849	6.6 E-06	15
9903.2561		041	2	2	1	2	2	0	136.163	7.9 E-06	15	10041.8507	B	041	6	2	5	5	2	4	416.208	5.4 E-06	50
9903.5446	P	041	2	2	0	3	0	3	136.761	5.0 E-07	50	10041.8507	B	121	5	0	5	8	2	4	602.773	5.4 E-06	50
9905.4004		041	2	2	0	2	2	1	134.902	2.48E-05	6	10042.6489	P	201	9	3	7	10	5	6	1718.718	5.5 E-07	50
9906.7049		041	2	1	1	1	1	0	42.371	1.32E-05	6	10044.7051	P	041	3	2	1	2	0	2	70.090	6.0 E-07	50
9908.4989		041	3	2	1	3	2	2	208.301	3.9 E-06	15	10048.4324		121	4	1	4	5	3	3	503.968	2.1 E-06	15
9908.8220		041	4	1	3	4	1	4	224.838	1.7 E-06	15	10048.6498	P	201	9	0	9	10	2	8	1437.989	3.7 E-07	50
9910.9034		041	3	1	3	2	1	2	79.495	1.98E-05	6	10048.8301		121	4	2	2	5	4	1	610.340	5.3 E-06	15
9915.1513	P	121	7	3	5	8	5	4	1255.186	4.1 E-07	50	10047.3910	P	201	8	4	4	9	6	3	1831.384	9.7 E-07	20
9916.0099		041	4	2	2	4	2	3	300.382	5.6 E-06	15	10062.4840	P	121	7	1	7	7	3	4	842.356	3.2 E-07	50
9918.8120	P	121	7	2	8	8	4	5	1122.709	1.4 E-06	20	10063.6106	P	201	9	2	8	10	4	7	1581.338	3.7 E-07	50
9920.2270		041	4	0	4	3	0	3	136.761	1.94E-06	8	10068.1770		041	8	2	4	5	2	3	446.510	7.2 E-06	15
9923.3235	P	041	5	4	1	6	4	2	757.780	1.2 E-06	15	10067.5227		220	4	1	4	5	2	3	446.510	2.4 E-06	15
9923.9488	P	121	8	4	2	7	6	1	1216.193	5.4 E-07	50	10081.8351		121	3	2	2	4	4	1	488.107	3.3 E-06	15
9924.2653		041	5	4	2	6	4	3	756.724	3.3 E-06	15	10083.2135		041	7	2	8	6	2	5	552.911	6.2 E-06	15

TABLE 2 Can. J. Phys. Cheviland et al. page 1/13

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10068.7497 P	041	8 1 7	7 1 6	704.214	3.4 E-06	15
10067.1937	220	5 3 3	6 4 2	757.780	1.5 E-06	15
10067.5873	121	3 2 1	4 4 0	488.134	1.1 E-06	20
10068.6541	121	5 1 4	6 3 3	661.548	3.9 E-06	15
10068.8985 B	201	7 4 4	8 6 3	1411.612	8.2 E-06	20
10068.8985 B	300	10 3 8	11 4 7	1899.008	8.2 E-06	20
10070.3018	041	6 4 2	6 4 3	756.724	5.0 E-06	15
10070.8487	041	5 4 2	5 4 1	610.340	1.05E-05	6
10071.0133 B	121	10 1 10	11 1 11	1327.119	1.79E-05	6
10071.0133 B	121	10 0 10	11 0 11	1327.109	1.79E-05	6
10071.4083 P	041	4 4 1	4 4 0	488.134	8.6 E-06	20
10071.4523 P	041	4 4 0	4 4 1	488.107	2.4 E-05	10
10072.8777 P	201	10 3 7	11 5 6	1998.995	3.7 E-07	50
10073.4467 P	121	11 1 11	11 1 10	1524.849	6.4 E-07	20
10073.7032 P	201	7 4 3	8 5 2	1411.848	8.3 E-07	20
10077.3492	041	4 3 2	3 3 1	285.219	3.1 E-06	15
10077.7061	041	4 3 1	3 3 0	285.418	9.0 E-06	15
10078.6012	121	10 2 8	11 2 9	1690.665	5.0 E-06	15
10081.5552 P	201	10 2 8	11 4 7	1899.008	1.3 E-06	50
10082.6174	041	7 2 5	6 2 4	602.773	6.3 E-06	15
10083.9696	041	5 3 3	5 1 4	399.457	9.7 E-07	15
10084.4146	041	8 2 7	7 2 6	709.608	1.4 E-06	15
10086.1573 P	201	8 3 6	9 5 5	1474.981	7.8 E-07	20
10086.3288	121	10 1 9	11 1 10	1524.849	3.9 E-06	15
10087.2914 P	300	8 0 8	9 3 7	1216.232	6.0 E-07	20
10087.8282	121	3 1 3	4 3 2	382.516	7.5 E-06	15
10088.6520 P	300	7 2 5	8 5 4	1255.166	1.8 E-07	50
10089.7278	220	4 2 3	5 3 2	508.812	1.67E-05	6
10090.5885 P	121	7 4 4	7 6 1	1216.193	2.7 E-07	50
10091.3586 P	121	8 4 4	8 6 3	1411.612	3.7 E-07	50
10092.4565 P	041	3 3 1	3 1 2	173.365	3.2 E-07	50
10093.0713 P	220	5 2 3	6 3 4	648.978	6.5 E-06	15
10094.5778 P	300	8 1 7	9 4 6	1340.885	5.1 E-07	50
10095.0898 P•	121	6 4 2	6 6 1	1045.057	3.2 E-07	50
10096.8348 P	201	9 1 8	10 3 7	1538.150	3.2 E-07	50
10097.4994	121	9 0 9	10 0 10	1114.533	1.4 E-05	15
10098.4817	121	4 0 4	5 2 3	446.510	1.90E-05	6
10098.8607	121	4 1 3	5 3 2	508.812	1.06E-05	6
10099.3063	121	9 1 9	10 1 10	1114.549	3.66E-05	6
10100.0070	121	9 2 7	10 2 8	1437.969	3.5 E-06	15
10100.2702	220	7 1 6	8 2 7	885.600	4.2 E-06	15
10100.4968 P	121	6 1 6	6 3 3	661.548	2.7 E-07	50
10100.8563 P	201	6 4 3	7 6 2	1216.189	1.5 E-06	50
10100.9110 P	041	5 3 3	4 3 2	382.516	1.0 E-05	15
10101.7013	041	5 3 2	4 3 1	383.842	3.3 E-06	15
10102.3501 P	201	6 4 2	7 6 1	1216.193	3.6 E-06	15
10104.2901	220	7 0 7	8 1 8	744.163	8.6 E-06	15
10104.4909 P	121	10 0 10	10 2 9	1293.634	1.5 E-06	15
10104.8020 B	300	8 6 3	9 7 2	1810.588	3.9 E-06	15
10104.8020 B	220	7 1 7	8 0 8	744.064	3.9 E-06	15
10106.2647 P	201	9 3 6	10 5 5	1724.707	3.7 E-07	50
10106.9804 P	121	9 1 8	10 1 9	1293.019	7.3 E-06	20
10108.1545	220	9 3 6	9 2 7	1201.921	3.5 E-06	15
10109.3440	220	3 1 3	4 2 2	315.779	2.4 E-06	15
10110.0821	121	7 2 6	7 4 3	931.237	8.3 E-07	15
10110.4343 P	220	4 2 2	5 3 3	503.968	3.5 E-06	20
10112.5703	121	8 3 5	9 3 6	1282.919	4.3 E-06	15
10113.6985	300	9 5 4	10 6 5	1874.973	1.6 E-06	15
10114.0722	121	9 3 7	10 3 8	1446.128	9.79E-06	6
10115.3340 P	201	8 0 8	9 2 7	1201.921	1.1 E-06	20
10120.2033	121	3 1 2	4 3 1	383.842	8.5 E-06	15
10120.5295	121	8 2 6	9 2 7	1201.921	2.54E-05	6
10121.5977 P	121	5 3 3	5 5 0	742.076	6.0 E-07	50
10124.1054 B	220	3 3 1	4 4 0	488.134	5.0 E-06	50
10124.2785	220	3 3 0	4 4 1	488.107	1.0 E-05	15
10124.9368	121	8 1 8	9 1 9	920.211	2.90E-05	6
10125.0109 P	121	2 1 2	3 3 1	285.219	2.6 E-06	50
10125.1660 P	041	6 3 3	5 3 2	508.812	8.1 E-06	50
10125.2214 P	121	8 0 8	9 0 9	920.169	8.3 E-05	10
10125.6912 B	220	3 2 2	4 3 1	383.842	9.3 E-07	50
10126.0658	201	7 3 5	8 5 4	1255.166	4.4 E-06	15
10127.6385 P	121	6 3 3	6 5 2	888.598	1.1 E-06	50
10128.6691	121	8 1 7	9 1 8	1079.080	4.75E-05	6
10128.9591 B	121	9 4 6	10 4 7	1581.336	1.02E-05	6
10128.9591 B	220	8 0 8	7 1 7	588.479	1.02E-05	6
10130.0656	220	6 1 6	7 0 7	588.243	1.43E-05	6
10130.5358 P	121	6 2 5	6 4 2	757.780	6.0 E-07	50
10131.2303	220	3 2 1	4 3 2	382.516	1.22E-05	6
10131.8469	121	9 0 9	9 2 8	1080.385	1.4 E-06	20
10131.8217	201	5 4 2	6 6 1	1045.057	3.7 E-06	15
10132.0720	201	5 4 1	6 6 0	1045.058	1.3 E-06	20
10132.2647	201	8 3 5	9 5 4	1477.297	2.3 E-06	15
10132.4798 P	121	7 3 4	7 5 3	1059.647	4.1 E-07	50
10133.5177 P	121	8 2 7	9 2 8	1080.385	1.8 E-05	20
10133.5837 P	121	7 2 5	8 2 6	982.912	1.4 E-05	20
10134.7780	121	9 1 9	9 1 8	1079.080	3.4 E-06	15
10137.9687	121	5 1 5	5 3 2	508.812	2.2 E-06	15
10138.2898 P	041	4 3 1	4 1 4	224.838	1.3 E-06	50
10138.3407	121	8 3 6	9 3 7	1216.232	7.65E-06	6
10139.2899 B	220	7 1 7	7 2 6	709.608	1.1 E-06	50
10139.3099 P•	201	9 2 7	10 4 6	1616.452	6.9 E-07	50
10141.8701	121	7 3 4	8 3 5	1050.157	1.53E-05	6
10142.2890	121	2 1 1	3 3 0	285.418	1.1 E-05	10
10142.7359	121	8 4 4	9 4 5	1360.235	1.09E-05	6
10143.4448 P	300	8 5 4	9 6 3	1631.384	3.9 E-06	15

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10144.2370 B•	220	7 0 7	7 1 6	704.214	1.3 E-06	50
10144.2738 B	300	7 1 6	8 4 5	1122.709	2.9 E-06	50
10144.4104	121	5 2 4	5 4 1	610.340	1.9 E-06	15
10144.8226	220	4 1 3	5 2 4	416.208	4.9 E-06	15
10146.4401	121	3 0 3	4 2 2	315.779	1.22E-05	6
10148.0919 B	300	7 0 7	8 3 6	1006.116	3.4 E-06	50
10148.1271 B	220	7 3 5	8 2 6	982.912	8.3 E-06	50
10148.9734	121	7 1 6	8 1 7	882.891	3.57E-05	6
10150.4208	121	7 0 7	8 0 8	744.064	6.22E-05	6
10150.8591 P	121	7 1 7	8 1 8	744.163	1.9 E-04	10
10151.9881 B	102	7 4 3	8 7 2	1590.690	2.2 E-05	10
10151.9881 B	220	5 0 5	6 1 6	447.252	2.2 E-05	10
10153.0207 B	220	2 1 2	3 2 1	212.156	9.7 E-06	20
10153.5283 P	300	8 2 7	9 3 6	1282.919	6.2 E-06	15
10153.6811 P	220	2 2 1	3 3 0	285.418	2.2 E-05	10
10154.5702 P	220	5 1 5	6 0 6	446.697	6.5 E-06	15
10154.6547 P	201	7 3 4	8 5 3	1255.912	1.8 E-06	50
10154.7693 P	121	9 5 5	10 5 6	1718.718	3.7 E-06	15
10154.8860 P	220	2 2 0	3 3 1	285.219	4.7 E-06	15
10155.7207	121	7 2 6	8 2 7	885.600	9.80E-05	6
10156.2768	121	8 4 5	9 4 6	1340.885	5.2 E-06	15
10157.1385	121	6 2 4	7 2 5	782.409	1.34E-04	6
10159.6938 P	220	3 1 2	4 2 3	300.362	1.7 E-05	10
10159.7906 P	121	8 0 8	8 2 7	885.600	7.9 E-06	10
10160.4319	201	7 2 5	8 4 5	1122.709	2.8 E-06	15
10161.3832	201	7 1 7	8 3 6	1006.116	1.91E-05	6
10161.9496	201	6 3 4	7 5 3	1059.647	2.9 E-06	15
10162.2561	121	8 1 8	8 1 7	882.891	3.0 E-06	15
10163.3981	220	6 1 6	6 2 5	552.911	1.7 E-06	15
10164.2029	121	7 3 5	8 3 6	1006.116	4.93E-05	6
10165.5564 P	121	4 1 4	4 3 1	383.842	1.1 E-06	50
10166.5936 P	201	8 1 7	9 3 6	1282.919	1.1 E-06	20
10167.8582 P	300	9 4 5	10 5 6	1718.718	3.0 E-06	20
10168.1381	121	6 1 5	7 1 6	704.214	2.21E-04	6
10169.0614 B	121	4 2 2	4 4 1	488.107	1.5 E-06	50
10169.2130 B	041	5 5 1	5 5 0	742.076	2.4 E-05	10
10169.2130 B	220	5 2 4	6 1 5	542.905	2.4 E-05	10
10170.8534 B	300	6 6 0	7 7 1	1394.813	6.9 E-06	50
10170.8534 B	300	6 6 1	7 7 0	1394.813	6.9 E-06	50
10171.4859	300	7 1 7	8 2 6	982.912	2.0 E-06	15
10172.5266 P	220	6 0 6	6 1 5	542.905	7.4 E-07	15
10173.2494	220	4 0 4	5 1 5	326.625	8.89E-06	6
10173.8790	121	6 3 3	7 3 4	842.356	1.04E-04	6
10174.8029	121	6 0 6	7 0 7	586.243	3.46E-04	6
10175.5668	121	6 1 6	7 1 7	586.479	1.14E-04	6
10176.0750 P	300	7 5 3	8 6 2	1411.646	3.1 E-06	15
10176.5458 B	300	7 5 2	8 6 3	1411.612	1.45E-05	6
10176.5458 B	220	2 1 1	3 2 2	206.301	1.45E-05	6
10176.7460	201	6 3 3	7 5 2	1059.835	9.80E-06	6
10176.9202	121	7 4 3	8 4 4	1131.776	1.08E-05	6
10178.5482 P	300	8 4 5	9 5 4	1477.297	1.1 E-05	10
10178.7009 B•	220	4 1 4	5 0 5	325.347	8.90E-05	6
10178.7009 B	121	6 2 5	7 2 6	709.608	8.90E-05	6
10179.1456 P	102	6 4 3	7 7 0	1394.813	5.6 E-07	50
10181.9516 B	201	8 2 6	9 4 5	1360.235	1.0 E-05	20
10181.9874 P	121	8 5 3	9 5 4	1477.297	4.8 E-06	50
10182.8207 P	121	6 2 4	6 4 3	756.724	5.5 E-06	50
10182.8815 P	121	5 2 3	6 2 4	602.773	9.1 E-05	20
10183.7696 P	121	9 1 8	9 3 7	1216.232	1.3 E-06	50
10184.0780	121	7 4 4	8 4 5	1122.709	3.93E-05	6
10184.8769 P	121	7 0 7	7 2 6	709.608	6.3 E-06	20
10184.9243 P	121	3 1 3	3 3 0	285.418	3.2 E-06	50
10185.0588 B	121	2 0 2	3 2 1	212.156	4.01E-05	6
10185.0588 B	220	5 1 5	5 2 4	416.208	4.01E-05	6
10185.6404	201	7 0 7	8 2 6	982.912	9.8 E-07	20
10186.7232 P	041	6 3 3	6 1 6	447.252	3.7 E-07	50
10187.1594 P	300	6 1 5	7 4 4	927.744	2.3 E-06	50
10187.2983 P	121	5 1 4	6 1 5	542.905	1.3 E-04	10
10187.6075	022	8 3 6	9 4 5	1360.235	2.1 E-06	15
10187.8919 P	201	9 5 4	9 7 3	1810.584	2.8 E-07	50
10188.5840 P	121	6 3 4	7 3 5	816.694	3.8 E-05	10
10188.6436 P	220	1 1 1	2 2 0	136.163	5.0 E-06	20
10188.7519 P	121	7 2 5	7 4 4	927.744	1.1 E-06	50
10190.6075	121	7 1 7	7 1 6	704.214	1.8 E-05	10
10191.9226	300	8 4 4	9 5 5	1474.981	2.0 E-06	15
10192.3888	220	3 0 3	4 1 4	224.838	3.2 E-05	10
10192.8825	041	5 4 2	4 4 1	488.107	5.7 E-06	10
10192.9888 P	041	5 4 1	4 4 0	488.134	2.1 E-06	15
10194.7806	201	5 3 3	6 5 2	888.598	1.3 E-05	10
10194.8855 P	300	8 3 5	9 4 5	1360.235	1.9 E-06	15
10195.0221 P	201	8 5 3	8 7 2	1590.630	3.2 E-07	50
10195.8298 B	220	1 1 0	2 2 1	134.902	1.5 E-05	50
10197.9224	121	5 0 5	6 0 6	446.697	1.94E-04	6
10199.0828	220	4 2 3	5 1 4	399.457	2.37E-05	6
10199.5285	121	5 1 5	6 1 6	447.252	6.29E-04	6
10199.7818 P	220	5 0 5	5 1 4	399.457	6.0 E-06	20
10200.7131	201	5 3 2	6 5 1	888.632	4.3 E-06	15
10201.1849 P	041	9 3 7	8 3 6	1006.116	4.2 E-07	50
10201.6325 P	121	8 1 7	8 3 6	1006.116	8.1 E-06	20
10201.8418	121	5 2 4	6 2 5	552.911	3.45E-04	6
10202.5277 P	201	7 5 3	7 7 0	1394.813	4.2 E-07	50
10203.0722	220	3 1 3	4 0 4	222.052	7.0 E-06	15
10203.4613	220	7 1 6	7 2 5	782.409	1.9 E-06	15
10203.8704 P	220	4 1 4	4 2 3	300.362	4.2 E-06	15
10205.6535	300	6 0 6	7 3 5	816.694	3.4 E-06	15

Table 2 Can. J. Phys. Chevillard et al.

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10206.1980	121	5 3 2	6 3 3	661.548	6.83E-05	6
10206.2828 B	201	6 2 5	7 4 4	927.744	1.9 E-06	50
10207.7358 B	121	9 1 9	8 3 6	1008.116	1.9 E-05	15
10207.7358 B	300	6 5 2	7 6 1	1216.193	1.9 E-05	15
10207.8420 P	300	6 5 1	7 6 2	1216.189	7.0 E-06	20
10208.1359 P	121	6 0 6	6 2 5	552.911	3.7 E-05	20
10208.2159	121	4 1 3	5 1 4	399.457	8.18E-04	6
10208.9036	121	6 4 2	7 4 3	931.237	6.22E-05	6
10210.1448	220	2 0 2	3 1 3	142.278	1.18E-05	6
10210.6619	121	4 2 2	5 2 3	446.510	5.05E-04	6
10211.7233 P	121	7 5 2	8 5 3	1255.912	1.0 E-05	15
10212.3315	121	6 4 3	7 4 4	927.744	2.53E-05	6
10212.8053 P	121	7 5 3	8 5 4	1255.166	2.3 E-05	20
10213.7802	201	4 0 4	5 4 1	610.340	1.6 E-08	15
10214.2460	300	7 4 4	8 5 3	1255.912	1.9 E-06	15
10214.6921	121	5 3 3	6 3 4	648.978	1.81E-04	6
10215.1688 P	121	7 1 6	7 3 5	816.694	4.2 E-06	15
10215.8255	121	1 0 1	2 2 0	136.163	6.5 E-06	15
10216.0227	220	4 2 3	4 3 2	382.516	6.1 E-06	15
10216.6850	041	6 4 2	5 4 1	610.340	6.0 E-06	15
10218.5358 P	300	7 2 6	8 3 5	1050.157	7.0 E-06	15
10218.6803 B	201	13 2 12	14 2 13	2327.914	2.8 E-06	50
10218.7013 B	201	14 1 14	15 1 15	2358.304	3.5 E-06	50
10218.7013 B	201	14 0 14	15 0 15	2358.304	3.5 E-06	50
10218.8268 B	121	3 1 2	3 3 1	285.219	4.7 E-06	50
10218.8268 B	220	3 1 3	3 2 2	206.301	4.7 E-06	50
10218.8885 P	300	7 4 3	8 5 4	1255.166	1.3 E-05	20
10219.1407 P	121	6 1 6	6 1 5	542.905	1.2 E-05	10
10219.8439	121	4 0 4	5 0 5	325.347	8.80E-04	6
10219.9587 P	201	6 1 6	7 3 5	816.694	4.5 E-06	20
10221.0665	201	12 2 10	13 2 11	2246.887	2.2 E-06	15
10222.2016	220	5 3 3	6 2 4	602.773	5.6 E-06	15
10222.6190 P	300	5 1 4	6 4 3	756.724	4.1 E-06	50
10222.7748 P	121	4 1 4	5 1 5	326.625	2.9 E-04	10
10223.3749 P	121	6 1 5	6 3 4	648.978	1.8 E-05	20
10223.4178 P	201	7 2 5	8 4 4	1131.776	2.1 E-05	20
10224.3771	220	4 0 4	4 1 3	275.497	3.1 E-06	15
10225.1566	121	4 1 3	4 3 2	382.516	9.28E-06	6
10225.3686 P	201	4 3 2	5 5 1	742.073	6.1 E-06	50
10225.4811	121	4 2 3	5 2 4	416.208	1.86E-04	6
10226.2355	121	5 1 4	5 3 3	503.968	5.4 E-06	15
10227.0403	201	4 3 1	5 5 0	742.076	1.26E-05	6
10227.9516	220	1 0 1	2 1 2	79.495	2.60E-05	6
10228.3399 P	220	3 2 1	3 3 0	285.418	3.7 E-06	50
10228.4128 B	121	5 0 5	5 2 4	416.208	3.2 E-05	10
10228.4128 B	220	2 1 2	3 0 3	136.761	3.2 E-05	10
10228.5483	121	3 1 2	4 1 3	275.497	1.87E-04	6
10229.2258 P	022	7 3 5	8 4 4	1131.776	6.5 E-07	50
10230.2733 P	220	2 1 2	2 2 1	134.902	4.8 E-06	15
10230.5583 P	220	4 2 2	4 3 1	383.842	8.9 E-07	20
10230.9913 P	121	8 2 7	8 2 6	982.912	2.7 E-06	15
10231.3411	201	7 1 6	8 3 5	1050.157	1.3 E-06	20
10233.2376	220	5 2 3	5 3 2	508.812	2.7 E-06	15
10233.8015 P	300	9 3 6	10 4 7	1581.336	4.7 E-06	15
10234.0378 P	220	3 2 2	4 1 3	275.497	1.0 E-04	10
10234.4818 P	041	5 4 2	5 2 3	446.510	1.3 E-06	50
10234.5198 B	041	6 3 3	5 1 4	399.457	6.1 E-07	50
10237.3359	121	4 3 1	5 3 2	508.812	2.94E-04	6
10238.5165 B	300	5 5 1	6 6 0	1045.058	3.65E-05	6
10238.5165 B	300	5 5 0	6 6 1	1045.057	3.65E-05	6
10238.7680	121	5 4 1	6 4 2	757.780	3.43E-05	6
10239.5839	121	5 4 2	6 4 3	756.724	9.44E-05	6
10239.9431	121	3 2 1	4 2 2	315.779	2.07E-04	6
10240.1875	121	3 0 3	4 0 4	222.052	3.9 E-04	10
10240.7903 P	300	7 3 5	8 4 4	1131.776	5.4 E-06	15
10241.1716	121	4 3 2	5 3 3	503.968	9.47E-05	6
10241.3149	121	6 5 1	7 5 2	1059.835	3.98E-05	6
10241.5577 P	121	6 5 2	7 5 3	1059.647	1.6 E-05	10
10241.7751 B	201	8 7 1	9 7 2	1810.588	5.2 E-06	15
10241.7751 B	201	8 7 2	9 7 3	1810.584	5.2 E-06	15
10243.1083 P	201	9 4 6	9 6 3	1631.384	7.0 E-07	50
10243.8618	220	3 0 3	3 1 2	173.365	1.52E-05	6
10244.2576	022	7 4 3	8 5 4	1255.166	4.2 E-06	15
10244.6299	121	4 0 4	4 2 3	300.362	8.50E-05	6
10245.2536 P	220	4 1 3	4 2 2	315.779	6.4 E-06	50
10245.5075	121	3 1 3	4 1 4	224.838	1.11E-03	6
10246.2689 P	300	6 4 3	7 5 2	1059.835	2.3 E-05	10
10246.6855	220	2 1 1	2 2 0	136.163	2.4 E-06	15
10246.9074 B	201	10 4 6	11 4 7	1899.008	7.0 E-06	20
10246.9074 B	300	5 2 4	5 5 1	742.073	7.0 E-06	20
10247.2301 P	220	0 0 0	1 1 1	37.136	6.8 E-06	50
10247.3229 P	121	5 1 5	5 1 4	399.457	6.7 E-05	20
10247.7581	300	6 4 2	7 5 3	1059.647	8.51E-06	6
10247.9003	220	3 1 2	3 2 1	212.156	1.00E-05	6
10248.0586	201	5 2 4	6 4 3	756.724	4.13E-05	6
10249.5817	121	3 2 2	4 2 3	300.362	6.89E-04	6
10250.4240 P	201	12 2 11	13 2 12	2042.374	2.4 E-06	15
10250.5068 P	201	12 1 11	13 1 12	2042.311	6.9 E-06	15
10250.7246 P	121	7 6 2	8 6 3	1411.812	1.1 E-05	20
10250.7871 B	201	13 0 13	14 0 14	2073.518	9.5 E-06	20
10250.7871 B	201	13 1 13	14 1 14	2073.518	9.5 E-06	20
10250.8008 P	121	7 6 1	8 6 2	1411.646	4.4 E-06	50
10251.5733 P	300	4 1 3	5 4 2	610.113	3.3 E-07	50
10254.0273 P	201	8 0 8	7 2 5	782.409	8.2 E-08	10
10254.1032 P	201	6 2 4	7 4 3	931.237	3.8 E-05	10

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10254.3207	121	2 1 1	3 1 2	173.365	1.07E-03	6
10254.4906 P	201	11 3 9	12 3 10	1982.508	7.4 E-06	10
10254.7144 P	220	1 1 1	2 0 2	70.090	3.6 E-06	20
10255.0147 P	201	8 4 5	8 6 2	1411.646	7.5 E-07	50
10255.1453 P	201	10 3 8	10 5 5	1724.707	5.1 E-07	50
10255.9181 P	121	3 0 3	3 2 2	206.301	1.8 E-05	15
10257.2481 P	220	2 0 2	2 1 1	95.175	7.2 E-06	15
10258.3408	300	8 3 5	9 4 6	1340.885	4.3 E-06	15
10258.6480 P	201	10 3 7	11 3 8	1813.223	8.5 E-06	20
10258.7078 P	300	5 0 5	6 3 4	648.978	1.4 E-05	20
10258.9112	121	7 2 6	7 2 5	782.409	2.15E-05	6
10260.4531	121	2 0 2	3 0 3	136.761	1.28E-03	6
10262.1500 P	201	9 6 3	10 6 4	1875.464	1.3 E-06	15
10262.3139 B	041	5 5 1	6 3 4	648.978	2.74E-05	6
10262.3139 B	121	2 0 2	2 2 1	134.902	2.74E-05	6
10262.5110 P	201	9 6 4	10 6 5	1874.973	3.5 E-06	15
10262.9759 P	121	8 0 8	7 2 5	782.409	2.3 E-07	50
10264.3021 B	201	7 4 4	7 6 1	1216.193	1.5 E-06	50
10264.8887 P	041	5 4 1	5 2 4	418.208	2.8 E-07	50
10265.0764	220	1 0 1	1 1 0	42.371	1.95E-05	6
10265.7338	220	2 2 1	3 1 2	173.365	4.34E-05	6
10266.3809	121	3 3 0	4 3 1	383.842	9.49E-05	6
10267.0282 F	121	4 4 0	5 4 1	610.340	1.1 E-04	10
10267.1717 P	201	8 4 4	8 6 3	1411.812	1.7 E-05	20
10267.2311 P	121	4 4 1	5 4 2	610.113	3.8 E-05	20
10267.5163	121	3 3 1	4 3 2	382.516	3.05E-04	6
10267.9534	121	2 1 2	3 1 3	142.278	3.89E-04	6
10268.6254	022	6 4 2	7 5 3	1059.647	3.1 E-06	15
10269.1647 P	201	7 4 3	7 6 2	1216.189	2.1 E-06	50
10269.3983	121	2 2 0	3 2 1	212.156	5.78E-04	6
10269.8674 B	121	5 5 0	6 5 1	888.632	2.3 E-05	50
10269.9019 B	121	5 5 1	6 5 2	888.598	5.3 E-05	50
10270.9421 P	201	10 4 6	10 6 5	1874.973	3.7 E-07	50
10271.4162 B	201	7 7 0	8 7 1	1590.690	7.11E-06	6
10271.4162 B	201	7 7 1	8 7 2	1590.690	7.11E-06	6
10271.9847 P	201	6 4 3	6 6 0	1045.058	5.1 E-07	50
10273.2775	201	5 1 5	6 3 4	648.978	2.02E-05	6
10273.4877	201	6 4 2	6 6 1	1045.057	1.8 E-06	15
10273.7771 P	201	9 5 4	10 5 5	1724.707	4.8 E-06	15
10273.9048 P	121	4 1 4	4 1 3	275.497	4.0 E-05	10
10274.0192	121	2 2 1	3 2 2	206.301	2.61E-04	6
10274.7146	201	9 2 8	9 4 5	1360.235	1.7 E-06	15
10275.9597	201	9 5 5	10 5 6	1718.718	9.79E-06	6
10276.1572	300	7 3 4	8 4 5	1122.709	3.31E-05	6
10276.6924	121	6 6 1	7 6 2	1216.189	4.8 E-06	15
10276.8437 B	300	5 4 2	6 5 1	888.632	2.0 E-05	50
10276.8437 B	121	6 6 0	7 6 1	1216.193	2.0 E-05	50
10277.1213 P	300	5 4 1	6 5 2	888.598	5.1 E-05	15
10277.2558 P	300	10 3 8	11 2 9	1690.665	7.2 E-06	15
10277.6635 P	102	6 3 3	7 6 2	1216.189	6.6 E-07	20
10278.1588	300	6 2 5	7 3 4	842.356	5.87E-05	6
10278.5970 P	201	5 2 3	6 4 2	757.780	1.6 E-05	10
10279.7118	201	6 0 6	6 4 3	756.724	1.9 E-06	15
10280.2704 P	300	6 3 4	7 4 3	931.237	4.5 E-05	10
10280.4187	121	1 1 0	2 1 1	95.175	2.85E-04	6
10281.4535	201	11 2 10	12 2 11	1774.751	1.88E-05	6
10281.6324 P	201	11 1 10	12 1 11	1774.619	8.1 E-06	15
10281.8993	121	1 0 1	2 0 2	70.090	4.1 E-04	10
10282.8253	201	9 4 5	10 4 6	1616.452	8.57E-06	6
10284.0692	201	9 3 7	9 5 4	1477.297	2.0 E-06	15
10284.4218	201	4 2 3	5 4 2	610.113	1.33E-05	6
10284.7856	201	10 3 8	11 3 9	1695.071	9.96E-06	6
10285.5387 P	121	6 2 5	6 2 4	602.773	1.7 E-05	10
10287.5256	201	6 1 5	7 3 4	842.356	5.5 E-06	15
10287.7752	220	4 2 2	5 1 5	326.625	2.4 E-06	15
10288.9085	220	3 2 1	4 1 4	224.838	1.23E-05	6
10289.8952	201	10 2 8	11 2 9	1690.665	1.91E-05	6
10290.2200	121	1 1 1	2 1 2	79.495	8.98E-04	6
10292.8222	201	9 3 6	10 3 7	1538.150	1.16E-05	6
10292.9258 P	300	9 2 7	10 3 8	1446.128	5.1 E-06	20
10293.1564	201	9 4 6	10 4 7	1581.336	2.40E-05	6
10293.3388 P	102	9 2 7	10 5 6	1718.718	7.0 E-07	50
10293.5838	022	5 4 2	6 5 1	888.632	4.6 E-06	15
10293.8174	022	5 4 1	6 5 2	888.598	1.4 E-05	15
10294.7974	220	5 2 3	6 1 6	447.252	3.7 E-06	15
10295.1021 P	201	8 6 2	9 6 3	1631.384	9.2 E-06	15
10295.2140 P	201	8 6 3	9 6 4	1631.251	3.1 E-06	15
10296.3509	022	4 1 4	5 2 3	446.510	9.4 E-07	15
10296.4661	220	3 3 1	4 2 2	315.779	2.8 E-06	15
10296.9804 P	121	3 1 3	3 1 2	173.365	2.3 E-04	10
10297.0309 P	300	6 3 3	7 4 4	927.744	2.7 E-05	50
10297.4874	102	9 0 9	10 3 8	1446.128	3.5 E-06	15
10297.7619 P	300	10 2 9	11 1 10	1524.849	2.7 E-06	20
10297.8273 P	220	2 2 0	3 1 3	142.278	3.8 E-05	20
10299.7026 P	201	13 2 12	13 2 11	2246.887	4.7 E-07	50
10300.7805	201	4 2 2	5 4 1	610.340	4.73E-05	6
10301.0502 P	121	8 4 4	9 2 7	1201.921	3.2 E-06	15
10304.4190 P	121	8 3 6	8 3 5	1050.157	3.9 E-06	15
10304.9388	121	0 0 0	1 0 1	23.794	7.79E-04	6
10305.2257 P	201	8 3 6	8 5 3	1255.912	2.9 E-06	50
10305.5946	300	5 1 5	6 2 4	802.773	1.17E-05	6
10306.1974 P	300	4 0 4	5 3 3	503.968	5.25E-06	6
10306.3070 B	300	4 4 1	5 5 0	742.076	9.5 E-05	50
10306.3313 B	300	4 4 0	5 5 1	742.073	5.2 E-05	50
10306.9368	220	1 1 0	1 0 1	23.794	2.17E-05	6

Table 2

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SIGMA CM-1		VIB	J'KA'KC'			J"KA"KC"			E" CM-1	INTENSITY CM-2 ATM-1	%
10308.2426		121	5	2	4	5	2	3	446.510	1.28E-04	6
10308.4137		201	8	5	3	9	5	4	1477.297	3.02E-05	6
10309.2383	P	121	7	3	4	8	1	7	882.891	1.4 E-06	15
10309.4440	P	201	8	5	4	9	5	5	1474.981	1.0 E-05	15
10310.4179		102	9	1	8	10	4	7	1581.336	1.2 E-06	15
10311.1553	P	201	10	2	9	11	2	10	1525.137	1.7 E-05	15
10311.9209		201	10	1	9	11	1	10	1524.849	5.62E-05	6
10312.0230	B	121	6	3	3	7	1	6	704.214	1.30E-05	6
10312.0230	B	220	3	3	0	4	2	3	300.362	1.30E-05	6
10312.2246	B	201	11	0	11	12	0	12	1557.844	9.06E-05	6
10312.2246	B	201	11	1	11	12	1	12	1557.849	9.06E-05	6
10312.7599		220	2	1	1	2	0	2	70.090	9.79E-06	6
10313.8650	P	201	12	0	12	12	2	11	1774.751	1.5 E-06	50
10313.9381	B	201	12	1	12	12	1	11	1774.619	6.3 E-06	15
10314.5373	P	121	6	0	6	5	2	3	446.510	1.6 E-06	50
10314.6589	P	300	5	3	3	6	4	2	757.780	3.3 E-05	15
10315.0559	P	121	2	1	2	2	1	1	95.175	1.51E-04	6
10315.2381	P	201	9	3	7	10	3	8	1446.128	6.6 E-05	15
10316.9161		201	3	2	2	4	4	1	488.107	3.26E-05	6
10317.7410	P	300	8	2	6	9	3	7	1216.232	9.9 E-06	10
10317.7986	P	201	9	2	7	10	2	8	1437.969	1.1 E-05	10
10318.4404	P	201	8	2	7	8	4	4	1131.776	2.9 E-06	50
10318.5412	P	201	8	4	4	9	4	5	1360.235	7.32E-05	6
10318.9090		201	5	0	5	6	2	4	602.773	6.6 E-06	15
10319.2002	B•	022	4	4	0	5	5	1	742.073	1.4 E-05	50
10319.2002	B	022	4	4	1	5	5	0	742.076	1.4 E-05	50
10320.9444	B	300	5	3	2	6	4	3	758.724	1.2 E-04	20
10321.3973		201	7	3	5	7	5	2	1059.835	6.69E-06	6
10321.6916		201	4	1	4	5	3	3	503.968	1.20E-05	6
10322.2560	P	121	4	1	3	3	3	0	285.418	1.0 E-06	15
10323.2949	P	220	3	1	2	3	0	3	136.761	2.3 E-05	10
10323.3489	P	201	3	2	1	4	4	0	488.134	1.1 E-05	10
10323.9557	B	121	7	7	0	8	7	1	1590.690	2.4 E-06	20
10323.9557	B	121	7	7	1	8	7	2	1590.690	2.4 E-06	20
10324.8069	B	220	1	1	1	0	0	0	0.000	6.4 E-06	50
10325.1486	B	220	3	1	2	2	2	1	134.902	2.5 E-05	15
10325.7758	P	201	8	4	5	9	4	6	1340.885	2.7 E-05	20
10325.9106	P	121	4	2	3	4	2	2	315.779	1.0 E-04	15
10326.6443	P	201	8	3	5	9	3	6	1282.919	1.37E-04	6
10327.1098	P	300	9	1	8	10	2	9	1293.634	9.5 E-06	10
10327.3449		121	1	1	1	1	1	0	42.371	1.08E-03	6
10327.4371	P	300	5	2	4	6	3	3	661.548	5.2 E-05	50
10327.5591	P	201	7	6	2	8	6	3	1411.612	2.8 E-05	50
10327.9621		121	7	3	5	7	3	4	842.356	1.20E-05	6
10328.8405	P	121	5	0	5	4	2	2	315.779	1.2 E-06	20
10329.2017	P	121	6	2	4	5	4	1	610.340	2.3 E-07	50
10330.3108	P	201	12	1	11	12	3	10	1962.508	8.0 E-07	20
10331.8239		121	4	2	2	5	0	5	325.347	8.0 E-06	15
10332.5940	P	201	12	2	11	12	2	10	1960.208	3.3 E-07	50
10332.8351		121	4	0	4	3	2	1	212.156	5.4 E-06	15
10332.9626		201	6	3	4	6	5	1	888.632	2.9 E-06	15
10333.6697		121	3	2	1	4	0	4	222.052	4.3 E-06	15
10336.0171		201	4	0	4	4	4	1	488.107	1.4 E-06	15
10337.7073	P	300	7	2	5	8	3	6	1006.116	7.3 E-05	50
10337.7878	P	121	3	2	2	3	2	1	212.156	7.3 E-04	10
10338.4569		121	1	1	0	1	1	1	37.136	3.65E-04	6
10338.9033	P	220	4	2	2	4	1	3	275.497	1.0 E-05	20
10338.9761	P	220	4	1	3	4	0	4	222.052	6.4 E-06	50
10340.2648	P	201	8	2	6	9	2	7	1201.921	3.1 E-05	15
10340.3808	P	220	3	2	1	3	1	2	173.365	3.1 E-05	15
10341.3146	P	201	9	2	8	10	2	9	1293.634	1.6 E-04	10
10341.3831	P	220	2	1	2	1	0	1	23.794	2.4 E-05	20
10341.6114	B	201	10	0	10	11	0	11	1327.109	1.9 E-04	10
10341.6114	B	201	10	1	10	11	1	11	1327.119	1.9 E-04	10
10341.7974	B	201	7	5	2	8	5	3	1255.912	2.6 E-05	50
10341.9658		201	9	1	8	10	1	9	1293.019	5.01E-05	6
10342.1768	P	201	7	5	3	8	5	4	1255.166	7.45E-05	6
10342.5927		220	5	2	3	5	1	4	399.457	1.79E-05	6
10343.0004	P	201	12	2	10	12	4	9	2124.952	7.1 E-07	50
10343.7106		121	6	3	4	6	3	3	661.548	3.94E-05	6
10344.1597		121	2	2	1	2	2	0	136.163	5.14E-04	6
10344.7934		121	2	2	0	3	0	3	136.761	1.56E-05	6
10344.9103	P	201	8	3	6	9	3	7	1216.232	5.3 E-05	20
10345.2249		201	11	1	11	11	1	10	1524.849	4.5 E-06	15
10345.6326		300	4	3	2	5	4	1	610.340	1.50E-04	6
10345.9215	P	022	8	3	6	9	2	7	1201.921	7.1 E-05	15
10346.3761	P	121	5	1	4	4	3	1	383.842	4.2 E-06	50
10346.6530	P	121	2	2	0	2	2	1	134.902	1.6 E-03	10
10347.1056	P	300	3	0	3	4	3	2	382.516	1.1 E-05	20
10347.3053	P	300	4	3	1	5	4	2	610.113	6.4 E-05	10
10347.9823	P	201	6	3	3	6	5	2	888.598	1.1 E-05	20
10348.1894		121	2	1	1	2	1	2	79.495	4.42E-04	6
10349.4214	P	121	3	2	1	3	2	2	206.301	2.4 E-04	10
10350.0848	P	121	9	4	6	9	4	5	1360.235	5.0 E-06	15
10350.9187	P	201	7	3	4	7	5	3	1059.847	3.0 E-06	15
10351.9062	P	201	7	2	6	7	4	3	931.237	2.3 E-05	50
10351.9906		121	1	0	1	0	0	0	0.000	2.83E-04	6
10353.2011		300	8	3	6	9	2	7	1201.921	1.20E-04	6
10353.2987	P	121	6	2	4	7	0	7	586.243	3.3 E-06	50
10353.5710		201	7	4	3	8	4	4	1131.776	6.01E-05	6
10354.3953	P	201	8	3	5	8	5	4	1255.186	6.6 E-06	15
10354.8584		121	5	3	3	5	3	2	508.812	2.72E-04	6
10355.0350	P	220	3	1	3	2	0	2	70.090	1.0 E-05	50
10355.0756	P	300	8	1	7	9	2	8	1080.385	1.1 E-05	50
10355.2848	P	300	9	0	9	10	1	10	1114.549	2.9 E-05	15
10355.3881	P	300	9	1	9	10	0	10	1114.533	8.8 E-06	15
10355.9954	P•	201	9	3	6	9	5	5	1474.981	3.3 E-06	50
10356.0597	P	300	6	2	4	7	3	5	816.694	3.9 E-05	15
10356.8109		121	4	2	2	4	2	3	300.362	3.01E-04	6
10357.3675		300	8	2	7	9	1	8	1079.080	1.37E-05	6
10357.5951	B	220	4	0	4	3	1	3	142.278	5.3 E-06	50
10357.7894		201	7	4	4	8	4	5	1122.709	1.70E-04	6
10357.9292	P	102	8	0	8	9	3	7	1216.232	3.3 E-06	50
10358.9610	B	201	6	6	0	7	6	1	1216.193	3.88E-05	6
10358.9610	B	201	6	6	1	7	6	2	1216.189	3.88E-05	6
10359.6030	P	220	2	2	1	2	1	2	79.495	4.13E-05	6
10360.0573	P	102	7	2	5	8	5	4	1255.166	9.9 E-07	20
10360.4098		201	7	3	4	8	3	5	1050.157	1.10E-05	6
10361.2970		121	4	3	2	4	3	1	383.842	1.98E-04	6
10361.7678		121	3	1	2	3	1	3	142.278	4.15E-05	6
10363.2190	P	300	8	5	4	8	6	3	1411.612	1.1 E-06	50
10363.6309		121	4	3	1	4	3	2	382.516	6.56E-04	6
10363.7789		121	5	3	2	5	3	3	503.968	8.84E-05	6
10364.6141		121	3	3	1	3	3	0	285.418	1.37E-03	6
10364.7439	P	201	3	1	3	4	3	2	382.516	5.6 E-05	10
10365.0036		121	3	3	0	3	3	1	285.219	4.49E-04	6
10365.2263		201	4	1	3	5	3	2	508.812	2.32E-04	6
10365.3933	B	300	4	1	4	5	2	3	446.510	9.5 E-05	10
10365.3933	B	121	8	4	5	8	4	4	1131.776	9.5 E-05	10
10365.3933	B	121	8	1	7	7	3	4	842.356	9.5 E-05	10
10365.5386	P	201	11	2	10	11	2	9	1690.665	4.6 E-06	20
10367.2583	B	121	6	3	3	6	3	4	648.978	1.68E-04	6
10367.2583	B•	220	4	1	4	3	0	3	136.761	1.68E-04	6
10367.2583	B	220	3	2	2	3	1	3	142.278	1.68E-04	6
10369.4450	P	121	5	2	3	5	2	4	416.208	4.1 E-05	15
10369.8275		201	8	2	7	9	2	8	1080.385	1.20E-04	6
10369.9392	P	201	9	1	9	10	1	10	1114.549	3.9 E-04	10
10370.0769	P	201	9	0	9	10	0	10	1114.533	1.92E-04	6
10370.3258	P•	121	7	1	6	6	3	3	661.548	6.2 E-06	50
10370.4383	P	201	8	1	7	9	1	8	1079.080	6.2 E-04	10
10371.5215	P	300	7	5	3	7	6	2	1216.189	4.7 E-07	50
10371.9593	P	300	7	5	2	7	6	1	1216.193	1.2 E-06	50
10372.2873		201	7	2	5	8	2	5	982.912	1.02E-04	6
10372.4428	P	102	8	1	8	9	2	7	1201.921	6.5 E-06	20
10372.9263	P	300	8	4	5	9	3	6	1282.919	1.91E-05	6
10373.0944		121	2	1	2	1	1	1	37.136	3.42E-04	6
10373.4207		121	2	0	2	1	0	1	23.794	1.47E-03	6
10374.0076		201	6	5	1	7	5	2	1059.835	1.20E-04	6
10374.1055	P	201	6	5	2	7	5	3	1059.647	4.6 E-05	10
10374.4180	B	300	4	2	3	5	3	2	508.812	2.9 E-04	10
10374.4180	B	300	5	2	3	6	3	4	648.978	2.9 E-04	10
10374.5196	P	300	3	3	1	4	4	0	488.134	7.6 E-05	50
10374.7656	P	300	3	3	0	4	4	1	488.107	2.5 E-04	20
10375.1167	B	201	7	3	5	8	3	6	1006.116	3.77E-04	6
10375.1167	B	201	6	1	6	6	3	3	661.548	3.77E-04	6
10375.4328	P	121	7	3	4	7	3	5	816.694	1.4 E-05	15
10375.5498	P	121	7	4	4	7	4	3	931.237	5.1 E-05	15
10375.7055	P	201	10	1	10	10	1	9	1293.019	5.8 E-06	15
10376.2517	B	201	6	2	5	6	4	2	757.780	2.3 E-05	50
10376.3712	P	121	8	5	3	9	3	6	1282.919	6.4 E-06	20
10376.4809	P	300	10	2	9	10	3	8	1446.128	2.6 E-06	15
10377.6137	P	201	4	0	4	5	2	3	446.510	5.6 E-05	15
10378.0906		022	7	3	5	8	2	6	982.912	1.74E-05	6
10378.8730	P	300	6	5	2	6	6	1	1045.057	1.0 E-06	50
10378.9778	P	300	6	5	1	6	6	0	1045.058	2.8 E-07	50
10379.2134	P	220	5	1	5	4	0	4	222.052	4.7 E-06	15
10380.2634		121	8	4	4	8	4	5	1122.709	2.3 E-05	15
10380.5151	P	041	6	4	2	5	2	3	446.510	4.2 E-07	20
10380.9522		121	7	4	3	7	4	4	927.744	2.05E-05	6
10381.2588	P	300	2	0	2	3	3	1	285.219	1.5 E-06	50
10381.3833		300	7	1	6	8	2	7	885.600	7.36E-05	6
10382.2947	P	121	6	4	3	6	4	2	757.780	3.7 E-05	15
10382.7557	P	300	8	1	8	9	0	9	920.169	4.8 E-05	10
10382.8352	P	121	4	1	3	4	1	4	224.838	1.3 E-04	10
10383.3113	B	102	6	2	4	7	5	3	1059.647	2.5 E-05	20
10383.3113	B	300	8	0	8	9	1	9	920.211	2.5 E-05	20
10383.4156	P	121	6	4	2	6	4	3	756.724	1.6 E-04	10
10385.3147	P	121	2	1	1	1	1	0	42.371	1.1 E-03	10
10385.8036	P	300	7	2	6	8	1	7	882.891	8.8 E-06	20
10385.9678		121	5	4	2	5	4	1	610.340	3.99E-04	6
10386.4334		121	5	4	1	5	4	2	610.113	1.21E-04	6
10386.6365		121	6	2	4	6	2	5	552.911	4.89E-05	6
10387.3092		201	6	4	2	7	4	3	931.237	4.07E-04	6
10388.8062	P	220	6	0	6	5	1	5	325.825	3.8 E-06	15
10389.2133	P	121	4	4	1	4	4	0	488.134	3.3 E-04	50
10389.2617	P	1,1	4	4	0	4	4	1	488.107	8.9 E-04	20
10389.5319	P	300	9	1	9	9	2	8	1080.385	5.1 E-06	50
10389.6558		300	7	3	5	8	2	6	982.912	6.52E-05	6
10389.9069	P	220	8	3	6	9	0	9	920.169	5.1 E-06	15
10390.8420	P	201	10	1	9	10	3	8	1446.128	1.5 E-05	50
10390.7600	P	300	9	0	9	9	1	8	1079.080	1.8 E-05	50
10390.8494		121	3	1	3	2	1	2	79.495	1.58E-03	6
10390.9599	P	220	6	1	6	5	0	5	325.347	1.5 E-05	50
10392.1291	B	121	3	0	3	2	0	2	70.090	6.0 E-04	20
10393.7162		201	3	1	2	4	3	1	383.842	5.83E-05	6
10394.1087		300	4	2	2	5	3	3	503.968	7.76E-05	6
10394.2253		201	6	3	3	7	3	4	842.356	7.77E-04	6
10394.4405	P	201	5	2	4	5	4	1	610.340	1.0 E-05	50
10398.1913	P	121	9	5	5	9	5	4	1477.297	6.8 E-06	20
10397.0875		201	8	0	8	9	0	9	920.169	7.91E-04	6

Table 2 Can. J. Phys. Desvaux et al.

CM-1								CM-1	CM-2 ATM-1	%
10397.5401		201	7	2	6	8	2	7	885.600	8.24E-04	6
10397.6896		201	8	1	8	9	1	9	920.211	2.94E-04	6
10398.3154	B•	201	10	2	9	10	2	8	1437.969	4.5 E-06	50
10398.4104	P	022	3	1	2	4	2	3	300.362	4.7 E-06	50
10398.6095		201	7	1	6	8	1	7	882.891	2.94E-04	6
10398.8739	P	300	5	0	5	5	3	2	508.812	1.2 E-06	50
10399.2227		201	10	2	8	10	4	7	1581.336	2.1 E-06	15
10399.6270		220	7	1	6	7	0	7	586.243	2.9 E-06	15
10400.2307		220	3	3	0	3	2	1	212.156	2.1 E-05	15
10400.6787	P	300	8	4	5	8	5	4	1255.166	4.2 E-06	15
10401.2025	B	220	7	0	7	6	1	6	447.252	6.1 E-06	50
10402.1704	P	220	7	1	7	6	0	6	446.697	3.4 E-06	50
10402.2824	P	121	8	2	6	9	0	9	920.169	9.8 E-05	10
10402.4093	P	201	2	1	2	3	3	1	285.219	1.8 E-05	15
10402.9303		201	6	2	4	7	2	5	782.409	1.05E-03	6
10403.5784	P	121	5	1	4	5	1	5	326.625	2.3 E-05	10
10403.7732	P	201	11	3	9	11	3	8	1813.223	1.3 E-06	50
10404.1236	P	121	8	5	3	8	5	4	1255.166	1.7 E-05	15
10404.2253	P	201	9	0	9	9	2	8	1080.385	1.1 E-05	15
10404.6973	P	102	5	2	3	6	5	2	888.598	3.4 E-05	15
10404.9027		201	6	3	4	7	3	5	816.694	2.72E-04	6
10405.1256	P	201	5	5	0	6	5	1	888.632	7.0 E-05	10
10405.2748	P	201	5	5	1	6	5	2	888.598	1.7 E-04	10
10405.4098	P	201	9	1	9	9	1	8	1079.080	2.9 E-05	10
10405.9440	P	220	3	3	1	3	2	2	206.301	7.9 E-06	15
10406.2081	B•	121	9	2	7	8	1	4	1131.776	1.8 E-06	50
10406.4017	P	201	4	2	3	4	4	0	488.134	4.2 E-06	15
10406.8928	B	121	7	2	5	7	2	6	709.608	6.9 E-06	50
10407.1230		121	4	1	4	3	1	3	142.278	5.34E-04	6
10407.3345	P	300	9	5	4	10	4	7	1581.336	5.7 E-06	50
10407.9888	P	121	7	5	2	7	5	3	1059.647	1.70E-05	6
10408.1372	P	121	7	5	3	7	5	2	1059.835	7.0 E-05	10
10408.2303	P	121	4	0	4	3	0	3	136.761	1.6 E-03	10
10408.7770	P	220	5	3	3	5	2	4	416.208	1.7 E-05	50
10408.8683		121	3	1	2	2	1	1	95.175	4.28E-04	6
10410.0425		300	7	0	7	8	1	8	744.163	1.27E-04	6
10410.2339		121	2	2	1	2	0	2	70.090	1.11E-05	6
10410.3339		300	7	1	7	8	0	8	744.064	3.24E-05	6
10410.5153	P	300	7	4	4	7	5	3	1059.647	2.3 E-06	20
10411.2358	B	300	8	7	2	9	6	3	1631.384	2.0 E-06	15
10412.5539	B	121	6	5	1	6	5	2	888.598	2.0 E-05	50
10412.5539	B•	121	6	5	2	6	5	1	888.632	2.0 E-04	50
10413.1825		121	3	2	2	3	0	3	136.761	6.2 E-05	10
10413.4421	P	201	5	1	5	5	3	2	508.812	2.9 E-05	50
10414.2282	P	300	7	4	3	7	5	2	1059.835	1.5 E-06	50
10414.3588	P	220	3	2	2	2	1	1	95.175	7.4 E-05	10
10414.5926	P	300	8	5	4	9	4	5	1360.235	9.0 E-06	20
10414.8958	P•	201	9	2	7	9	4	6	1340.885	7.9 E-06	50
10415.0423		121	3	2	2	2	2	1	134.902	7.63E-04	6
10416.0113		300	3	2	1	4	3	2	382.516	3.21E-04	6
10416.3041	P	300	6	2	5	7	1	6	704.214	1.0 E-05	50
10416.4239	B	121	5	5	1	5	5	0	742.076	5.35E-04	6
10416.4239	B	121	5	5	0	5	5	1	742.073	5.35E-04	6
10417.3233		300	8	1	8	8	2	7	885.600	1.42E-05	6
10417.5125	B	022	4	1	4	5	0	5	325.347	8.3 E-06	10
10417.5125	B	300	6	4	3	6	5	2	888.598	8.3 E-06	10
10417.6637	P	201	2	1	1	3	3	0	285.418	1.6 E-04	10
10417.7769	P	300	3	1	3	4	2	2	315.773	8.9 E-05	10
10418.2205	B	102	7	0	7	8	3	6	1008.116	1.9 E-06	50
10418.5135	P	121	4	3	2	5	1	5	326.625	1.1 E-06	20
10418.7541	P	201	9	1	8	9	3	7	1216.232	8.1 E-06	50
10418.8235	P	300	9	1	8	9	2	7	1201.921	6.8 E-06	50
10418.8863	P	003	7	5	3	8	7	2	1590.690	1.0 E-06	50
10419.3515		201	5	4	1	6	4	2	757.780	1.86E-04	6
10419.4788	P	201	8	2	6	9	4	5	1122.709	1.5 E-05	50
10419.5589	P	121	3	2	1	2	2	0	136.163	2.4 E-04	10
10419.6372	P	121	4	2	3	4	0	4	222.052	2.5 E-05	20
10420.0040	P	300	7	4	4	8	3	5	1050.157	1.4 E-05	10
10420.1555		201	5	4	2	6	4	3	756.724	6.58E-04	6
10420.4064	P	102	5	1	5	6	4	2	757.780	1.8 E-05	20
10420.6318	P	300	8	0	8	8	1	7	882.891	6.2 E-06	20
10421.1864	P	121	7	4	4	8	2	7	885.600	5.2 E-06	15
10421.4312	P	220	7	3	5	7	2	6	709.608	6.2 E-06	15
10421.9428		121	5	1	5	4	1	4	224.838	1.42E-03	6
10422.5658	P	121	5	0	5	4	0	4	222.052	4.8 E-04	50
10422.9921	P	201	4	2	2	4	4	1	488.107	1.8 E-05	20
10423.3424		201	7	1	7	8	1	8	744.163	1.19E-03	6
10423.8432	P	300	5	4	1	5	5	0	742.076	4.2 E-06	50
10423.9472	P	201	11	1	11	10	3	8	1446.128	1.4 E-06	50
10424.4224	B	201	6	2	5	7	2	6	709.608	5.1 E-04	20
10424.4892	P	201	7	0	7	8	0	8	744.064	6.5 E-04	50
10424.7804	P	102	8	2	7	9	3	6	1282.919	3.9 E-06	50
10425.1030	P	121	6	1	5	6	1	6	447.252	4.8 E-05	50
10425.1688	P	220	4	2	3	3	1	2	173.385	1.23E-03	6
10425.8687		201	6	1	5	7	1	6	704.214	2.04E-03	6
10426.1559		121	7	3	5	8	1	8	744.163	1.01E-03	6
10426.2581	P	201	5	2	3	5	4	2	610.113	2.2 E-05	20
10426.4287		300	5	1	4	6	2	5	552.911	3.45E-04	6
10427.4545	P	201	7	2	5	7	4	4	927.744	1.1 E-05	20
10427.4983	B	102	6	6	0	7	7	1	1394.813	3.8 E-06	50
10427.4983	B	102	6	6	1	7	7	0	1394.813	3.6 E-06	50
10427.7987		201	5	3	2	6	3	3	881.548	4.74E-04	6
10428.6152		201	6	2	4	6	4	3	756.724	4.02E-05	6
10429.0869		300	6	3	4	7	2	5	782.409	2.59E-04	6
10429.4043	P	121	5	2	4	5	0	5	325.347	5.3 E-05	15
10430.3516	B•	300	8	2	7	8	3	6	1006.116	2.9 E-05	15
10430.4660	P	121	6	4	3	7	2	6	709.608	4.0 E-05	10
10430.8595	P	121	4	4	0	5	2	3	446.510	2.6 E-06	15
10430.9757		022	3	0	3	4	1	4	224.838	8.92E-06	6
10431.6561	P	201	8	0	8	8	2	7	885.600	7.7 E-05	10
10432.4144	P	300	8	3	6	8	4	5	1122.709	4.4 E-06	50
10432.9584	P•	220	7	1	6	6	2	5	552.911	2.1 E-06	50
10433.0274	P	201	9	2	8	9	2	7	1201.921	2.3 E-05	10
10433.2803	P	022	7	3	5	7	4	4	927.744	2.3 E-06	50
10433.6053		201	5	2	3	6	2	4	602.773	9.10E-04	6
10434.3079	P	121	4	1	3	3	1	2	173.385	1.1 E-03	10
10434.3818	P	201	5	3	3	6	3	4	648.978	1.5 E-03	10
10434.9892		201	8	1	8	8	1	7	882.891	2.15E-05	6
10435.3918	B	121	4	2	3	3	2	2	206.301	7.8 E-04	50
10435.4171	B	121	6	1	6	5	1	5	326.625	7.8 E-04	50
10435.6980	P	121	6	0	6	5	0	5	325.347	1.08E-03	6
10435.8693	B	300	6	0	6	7	1	7	588.479	7.8 E-05	50
10436.3478		300	6	1	6	7	0	7	586.243	1.58E-04	6
10436.6293	B	220	5	2	4	4	1	3	275.497	4.7 E-06	50
10436.8442	B	121	8	2	6	8	2	7	885.600	1.6 E-06	50
10438.0942		300	8	6	3	9	5	4	1477.297	3.7 E-06	15
10438.7898		300	2	2	1	3	3	0	285.418	3.56E-04	6
10439.5900	P	022	7	4	3	7	5	2	1059.835	2.2 E-06	50
10439.6378	P	022	6	4	2	6	5	1	888.632	1.9 E-06	50
10440.1464	P	022	5	4	2	5	5	1	742.073	4.4 E-06	50
10440.2643		300	2	2	0	3	3	1	285.219	1.23E-04	6
10440.3302	P	022	5	4	1	5	5	0	742.076	1.5 E-05	50
10440.4485	P	300	9	4	5	10	3	8	1446.128	3.5 E-06	20
10440.5509	P	102	7	5	2	8	6	3	1411.612	2.9 E-06	20
10440.6747		102	7	5	3	8	6	2	1411.646	1.0 E-06	15
10441.6155	B	121	6	2	5	6	0	6	446.697	1.2 E-05	20
10441.6155	B	102	7	1	7	8	2	6	982.912	1.2 E-05	20
10441.7014	P	201	10	3	8	10	3	7	1538.150	2.2 E-06	50
10441.8172	P	201	4	1	4	4	3	1	383.842	1.5 E-05	10
10442.4975	P	022	4	1	4	4	2	3	300.362	2.0 E-06	50
10443.3970	B	201	8	1	7	8	3	6	1006.116	1.12E-04	6
10443.3970	B	121	5	4	2	6	2	5	552.911	1.12E-04	6
10444.2033	P	300	3	0	3	3	3	0	285.418	6.7 E-07	50
10444.7899	P	300	7	1	7	7	2	6	709.608	1.2 E-05	10
10445.0165		121	4	2	2	3	2	1	212.156	9.51E-04	6
10445.3861	P	121	7	1	6	7	1	7	586.479	2.5 E-05	10
10445.4790		300	4	1	3	5	2	4	416.208	1.50E-04	6
10445.6058	B•	003	6	5	2	7	7	1	1394.813	1.3 E-06	50
10445.6663	B•	003	6	5	1	7	7	0	1394.813	2.3 E-06	50
10446.0808	P	300	5	2	4	5	1	5	542.905	1.8 E-04	20
10446.1416	P	121	7	6	2	7	6	1	1216.193	5.7 E-05	20
10446.2566	P	121	7	6	1	7	6	2	1216.189	1.8 E-05	10
10447.5693	B	121	7	1	7	6	1	6	447.252	6.9 E-04	20
10447.7886	B	121	7	0	7	6	0	6	446.697	2.5 E-04	10
10447.7886	B•	121	6	6	1	6	6	0	1045.058	2.5 E-04	10
10447.9603	P	121	6	6	0	6	6	1	1045.057	1.60E-04	6
10448.7917		102	6	3	3	6	6	0	1045.058	7.1 E-06	15
10449.9929	B	201	4	4	0	5	4	1	610.340	8.0 E-04	10
10449.9929	B	300	7	0	7	7	1	6	704.214	8.0 E-04	10
10450.1906	B	201	6	0	6	7	0	7	586.243	4.1 E-03	20
10450.1906	B	201	6	1	6	7	1	7	586.479	4.1 E-03	20
10450.6629	B	300	8	4	4	9	3	7	1216.232	1.0 E-05	50
10451.8720		201	5	2	4	6	2	5	552.911	2.86E-03	6
10451.9961	P	300	7	2	6	7	3	5	816.694	1.3 E-05	50
10452.4910	P	201	10	1	10	9	3	7	1216.232	2.1 E-06	50
10452.5505	P	300	8	1	7	8	2	6	982.912	6.4 E-06	15
10453.1590		201	5	1	4	6	1	5	542.905	9.88E-04	6
10454.3906		121	5	2	4	4	2	3	300.362	8.61E-04	6
10454.7068		121	5	1	4	4	1	3	275.497	3.08E-04	6
10455.0788	P	121	7	2	6	7	0	7	586.243	1.8 E-05	15
10455.9425	B	300	7	5	3	8	4	4	1131.776	5.5 E-06	50
10457.5912	P	121	9	2	7	9	2	8	1080.385	1.1 E-06	50
10457.7599		121	2	2	0	1	0	1	23.794	1.58E-05	6
10458.6672	P	121	8	1	8	7	1	7	588.479	1.3 E-04	20
10458.9446		201	7	0	7	7	2	6	709.608	4.47E-05	6
10459.1457		121	8	0	8	7	0	7	586.243	3.54E-04	6
10459.9203		121	4	3	2	3	3	1	285.219	1.11E-04	6
10460.3046	P	201	4	3	1	5	3	2	508.812	2.2 E-03	10
10460.4302	P	300	5	0	5	6	1	6	447.252	5.5 E-04	10
10460.7294		121	4	3	1	3	3	0	285.418	4.43E-04	6
10461.3109	P	201	9	4	5	10	2	8	1437.969	1.4 E-06	50
10461.6725	B	300	5	1	5	6	0	6	446.697	1.6 E-04	50
10461.6725	B	201	8	7	1	8	7	2	1590.690	1.6 E-04	50
10461.6725	B	201	8	7	2	8	7	1	1590.690	1.6 E-04	50
10461.7211	P	300	2	1	2	3	2	1	212.156	4.2 E-04	20
10461.8427	P	201	3	1	3	3	3	0	285.418	3.3 E-05	10
10462.3520		121	6	3	4	6	1	5	542.905	8.30E-06	6
10462.8843	P	201	9	4	6	8	6	3	1411.612	8.6 E-07	50
10463.1227	B	041	9	3	7	8	1	8	744.163	4.9 E-06	50
10463.2910		201	7	1	7	7	1	6	704.214	1.40E-04	6
10463.4701		201	4	3	2	5	3	3	503.988	7.15E-04	6
10463.5837	P	121	8	1	7	8	1	8	744.163	1.2 E-05	50
10463.7478	P	300	6	4	3	7	3	4	842.356	6.7 E-05	20
10463.9858		300	3	1	2	4	2	3	300.362	5.58E-04	6
10464.2148	P	121	5	3	3	5	1	4	399.457	3.3 E-05	50
10464.5909		201	4	2	2	5	2	3	446.510	4.0 E-03	10
10464.8093	P	201	7	1	6	7	3	5	816.694	3.5 E-05	10
10465.4463		300	7	5	2	8	4	5	1122.709	1.60E-05	6
10466.1053	P	121	7	3	5	7	1	6	704.214	2.3 E-05	50
10466.8029	P	201	10	0	10	9	2	7	1201.921	9.1 E-07	20

Table 2 Can. J. Phys. Chevillard etal. page 5

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10487.2927 B	201	8 2 7	8 2 6	982.912	1 5 E-04	10
10487.2927 B	201	7 7 1	7 7 0	1394.813	1 5 E-04	10
10487.2927 B	201	7 7 0	7 7 1	1394.813	1.5 E-04	10
10467.6273 B	300	7 3 4	7 4 3	931.237	1.3 E-06	50
10467.8620 B	300	4 3 2	4 4 1	488.107	1 9 E-08	50
10467.9851 B	121	9 0 9	8 0 8	744.064	7 4 E-05	50
10468.3882	201	2 0 2	3 2 1	212.156	1.55E-04	6
10469.2872 P	300	4 3 1	4 4 0	488.134	5.7 E-07	50
10469.6867 B	300	6 1 6	6 2 5	552.911	2.9 E-04	20
10469.6867 B	121	9 1 9	8 1 8	744.163	2.9 E-04	20
10469.8751	121	5 2 3	4 2 2	315.779	2.52E-04	6
10471.0167 P	102	6 5 1	7 6 2	1216.189	2.0 E-06	50
10471.0825 P	102	6 5 2	7 6 1	1216.193	4.8 E-06	20
10471.3540 B	003	8 4 4	9 3 3	1631.384	9.1 E-07	50
10471.5381 P	300	6 2 5	6 3 4	648.978	9.2 E-05	15
10471.6789 P	121	8 3 6	8 1 7	882.891	2.7 E-06	50
10472.1031	121	6 2 5	5 2 4	416.208	1.93E-04	6
10472.8947	121	6 1 5	5 1 4	399.457	6 70E-04	6
10474.5811 P	201	4 1 3	5 1 4	399.457	3.7 E-03	10
10475.0001 B	201	5 1 5	6 1 6	447.252	6.5 E-03	20
10475.0001 B	201	5 0 5	6 0 6	448.697	6.5 E-03	20
10475.6200 P	121	10 2 8	10 2 9	1293.634	4.5 E-06	50
10476.0818 P	220	3 3 1	2 2 0	136.163	3 5 E-06	20
10476.6678	121	3 3 1	3 1 2	173.365	8.8 E-06	15
10476.8566 P	201	8 4 4	9 2 7	1201.921	1 6 E-06	50
10477.4862 P	220	3 3 0	2 2 1	134.902	8.2 E-06	20
10477.9565 B	121	10 1 10	9 1 9	920.211	9 8 E-05	10
10477.9565 B	121	10 0 10	9 0 9	920.169	9.8 E-05	10
10478.3273	201	4 2 3	5 2 4	416.208	1.40E-03	6
10478.4485 P	201	9 3 7	9 3 6	1282.919	2 4 E-05	20
10479.4435 P	300	6 0 6	6 1 5	542.905	2 2 E-05	15
10479.7872	121	9 1 8	9 1 9	920.211	1 4 E-06	15
10480.9018 P	201	6 1 5	6 3 4	648.978	1 8 E-04	10
10481.1538	121	5 3 3	4 3 2	382.516	4 91E-04	6
10482.4482 P	022	3 0 3	3 1 2	173.365	8 22E-06	6
10483.3157	300	2 1 1	3 2 2	208.301	1.79E-04	6
10483.5320 B	300	4 0 4	5 1 5	326.625	4 71E-04	6
10483.5320 B	201	6 0 6	6 2 5	552.911	4 71E-04	6
10483.7683 P	300	4 2 3	5 1 4	399.457	2.20E-03	6
10483.9047 P	121	5 3 2	4 3 1	383.842	1 6 E-04	20
10483.9574 P	121	9 2 8	9 0 9	920.169	2.0 E-05	50
10484.5744 P	300	7 1 6	7 2 5	782.409	3.5 E-05	10
10485.0189	300	5 2 4	5 3 3	503.968	6.76E-05	6
10485.6314 P	121	3 2 1	2 0 2	70.090	8.2 E-06	15
10486.5561 B	300	4 1 4	5 0 5	325.347	2.8 E-04	20
10487.5093 P	102	7 4 3	8 5 4	1255.166	5.8 E-06	15
10488.4088 P	121	7 2 6	6 2 5	552.911	4 60E-04	6
10488.9581	121	7 1 6	6 1 5	542.905	1 11E-04	6
10490.2862 P	102	7 2 6	8 3 5	1050.157	1 4 E-06	20
10490.7113 P	300	6 4 2	7 3 5	816.694	2.2 E-05	20
10490.9292	201	3 3 0	4 3 1	383.842	7.06E-04	6
10491.5219	201	4 1 3	4 3 2	382.516	2 14E-04	6
10491.9993	201	3 3 1	4 3 2	382.516	2.19E-03	6
10492.1589 P	300	5 1 5	5 2 4	416.208	5.1 E-05	50
10492.3392 P	201	3 1 2	3 3 1	285.219	3.28E-05	6
10492.5650 B	102	5 1 4	6 4 3	756.724	3.1 E-06	50
10492.5650 B	003	7 4 3	8 6 2	1411.646	3.1 E-06	50
10492.6463 P	201	7 3 5	6 5 2	888.598	7 3 E-06	50
10492.6932 P	300	6 5 2	7 4 3	931.237	2.2 E-05	20
10493.0374	121	6 2 4	5 2 3	448.510	5.17E-04	6
10493.3056 P	022	7 4 3	8 3 6	1006.116	2 7 E-06	20
10493.7484 P	201	6 1 6	6 1 5	542.905	9 8 E-05	15
10494.5173 B	201	6 3 3	5 5 0	742.076	2 4 E-06	50
10495.4148 P	201	10 2 9	9 4 6	1340.885	8 0 E-06	50
10495.7039	201	3 2 1	4 2 2	315.779	1 80E-03	6
10496.2877 P	300	6 5 1	7 4 4	927.744	9.3 E-06	15
10497.2668 P	022	2 2 1	3 1 2	173.365	3.7 E-06	50
10497.3908	300	1 1 1	2 2 0	136.163	1 97E-04	6
10498.7767	201	4 0 4	5 0 5	325.347	8.3 E-03	10
10499.0339 P	201	4 1 4	5 1 5	326.625	2.6 E-03	20
10500.3377	201	1 0 1	2 2 0	136.163	1 3 E-05	15
10500.7309	201	7 2 6	7 2 5	782.409	1.63E-04	6
10501.2898	121	6 3 4	5 3 3	503.968	1.32E-04	6
10501.4655 P	300	7 2 5	7 3 4	842.356	1.7 E-05	10
10501.7070 B•	201	9 0 9	8 2 6	982.912	8.4 E-06	50
10501.8731 B	102	5 5 0	6 6 1	1045.057	2.4 E-05	50
10501.8731 B	102	5 5 1	6 6 0	1045.058	2 4 E-05	50
10502.0616 P	201	3 1 2	4 1 3	275.497	2.40E-03	6
10503.5347 P	121	8 1 7	7 1 6	704.214	2.4 E-04	10
10503.9381 P	300	5 4 2	6 3 3	881.548	2.8 E-05	20
10504.1719	300	1 1 0	2 2 1	134.902	4.81E-04	6
10504.2949 P	121	8 2 7	7 2 6	709.808	6.9 E-05	10
10504.6621 P	201	3 2 2	4 2 3	300.362	5.4 E-03	10
10504.7841 B	300	6 1 5	5 4 2	610.113	8.8 E-04	20
10504.7841 B	300	3 0 3	4 1 4	224.838	8.8 E-04	20
10505.4734 P	201	5 0 5	5 2 4	418.208	1 78E-04	6
10505.8319 P	300	8 8 1	7 5 2	1059.835	3.4 E-06	20
10506.1006 P	201	9 6 4	9 6 3	1631.384	1 4 E-05	10
10506.2000 P	201	9 3 7	8 5 4	1255.166	1 8 E-06	50
10506.3844 P	201	9 6 3	9 6 4	1631.251	5.4 E-06	15
10507.4231	121	6 3 3	5 3 2	508.812	3 61E-04	6
10507.6349 P	102	7 3 5	8 4 4	1131.776	3 7 E-06	50
10507.9362 B•	121	3 3 0	3 1 3	142.278	2.3 E-05	50
10508.2058 B	121	5 4 2	4 4 1	488.107	2.3 E-04	50
10508.2058 B•	300	5 0 5	5 1 4	399.457	2 3 E-04	50

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10508.4139 P	121	5 4 1	4 4 0	488.134	6.35E-05	6
10509.1951 B	220	5 3 3	4 2 2	315.779	1 5 E-06	50
10509.4632 P	300	4 3 2	5 2 3	446.510	2.4 E-04	10
10510.0894 P	102	6 1 6	7 2 5	782.409	3.1 E-06	15
10510.9824	201	8 3 6	8 3 5	1050.157	2.49E-05	6
10511.2053 P	300	6 2 4	6 3 3	661.548	9.5 E-06	15
10511.5428 B•	300	3 1 3	4 0 4	222.052	2.5 E-04	50
10511.5428 B	300	4 1 4	4 2 3	300.362	2.5 E-04	50
10512.2440 P	201	9 2 8	8 4 5	1122.709	4.5 E-06	10
10513.1079 P	300	3 2 1	3 3 0	285.418	2.1 E-05	15
10513.2658	300	7 3 4	8 2 7	885.600	1 68E-05	6
10513.7223	121	7 2 5	6 2 4	602.773	7.91E-05	6
10514.1232 P	102	6 4 3	7 5 2	1059.835	1 2 E-05	15
10514.2526 B	201	9 4 6	9 4 5	1360.235	3 2 E-05	50
10514.2526 B	121	8 4 5	8 2 6	982.912	3.2 E-05	50
10514.5872	300	5 2 3	5 3 2	508.812	3.61E-05	6
10514.8193 P	201	8 6 3	8 6 2	1411.646	2.1 E-05	50
10514.8747 B	201	8 6 2	8 6 3	1411.612	5 8 E-05	50
10515.0758 P	102	6 4 2	7 5 3	1059.647	4 0 E-06	15
10515.1700 P	300	6 3 3	7 2 6	709.608	1 6 E-05	15
10516.7419	300	5 4 1	6 3 4	648.978	6.65E-05	6
10516.8696 P	003	6 4 2	7 6 1	1216.193	1 8 E-06	50
10517.1094 P	121	9 1 8	8 1 7	882.891	4 6 E-05	50
10517.2052 B•	220	5 2 3	4 1 4	224.838	6 0 E-04	10
10517.2052 B	300	3 2 2	4 1 3	275.497	6 0 E-04	10
10517.3811 P	201	9 5 5	9 5 4	1477.297	2.7 E-05	10
10518.5286 B	121	9 2 8	8 2 7	885.600	1 3 E-04	10
10518.5286 B	201	7 1 7	6 3 4	648.978	1 3 E-04	10
10518.8419 B	300	8 3 5	9 2 8	1080.385	1 5 E-06	50
10519.8320 B	121	7 7 1	7 7 0	1394.813	6 4 E-05	15
10519.8320 B	121	7 7 0	7 7 1	1394.813	6 4 E-05	15
10520.4090	121	4 2 2	3 0 3	136.761	2.97E-05	6
10520.5140 P	300	8 1 8	7 2 5	782.409	3.4 E-06	50
10520.6684 P	022	5 4 2	6 3 3	661.548	3 3 E-06	20
10521.3402 P	121	7 3 5	6 3 4	648.978	1 1 E-04	10
10521.5677 P	201	3 0 3	4 0 4	222.052	3 7 E-03	20
10521.9323 P	201	7 3 4	6 5 1	886.632	1 4 E-05	50
10522.4227 P	201	3 1 3	4 1 4	224.838	9 6 E-03	10
10522.7981	201	5 1 5	5 1 4	399.457	5 50E-04	6
10522.9808 B	201	7 6 2	7 6 1	1216.193	2 15E-04	6
10522.9808 B	201	7 6 1	7 6 2	1216.189	2.15E-04	6
10523.5009 P	201	9 5 4	9 5 5	1474.981	1.2 E-05	50
10523.7626	201	4 0 4	4 2 3	300.362	7.03E-04	6
10524.1993	300	2 0 2	3 1 3	142.278	7.74E-04	6
10524.7588 B	003	8 1 8	9 3 7	1216.232	1 1 E-04	20
10524.7588 B	300	5 3 2	6 2 5	552.911	1 1 E-04	20
10525.1608 P	300	5 0 5	4 3 2	382.516	1 5 E-06	50
10525.7851 P	300	5 5 1	6 4 2	757.780	9 9 E-06	50
10526.2756	201	2 2 0	3 2 1	212.156	4.97E-03	6
10526.8547 P	300	5 5 0	6 4 3	756.724	2.4 E-05	20
10527.2552 P	300	3 1 3	3 2 2	206.301	7 0 E-05	20
10527.6665 B	220	8 3 6	7 2 5	782.409	3 9 E-05	50
10527.6665 B	201	7 3 4	8 1 7	882.891	3 9 E-05	50
10528.2667	220	7 3 5	6 2 4	602.773	1 50E-05	6
10528.3794	102	5 0 5	6 3 4	648.978	3 46E-06	6
10528.5134	201	8 5 4	8 5 3	1255.912	2 80E-05	6
10528.7719 P	041	5 5 1	4 3 2	382.516	2 9 E-06	50
10529.7156 B	201	2 1 1	3 1 2	173.365	1 2 E-02	50
10529.7973 P	121	6 4 2	5 4 1	610.340	2 6 E-04	50
10529.9613 P	121	6 4 3	5 4 2	610.113	8 2 E-05	20
10530.0959 B	201	6 6 1	6 6 0	1045.058	7 14E-04	6
10530.0959 B	201	6 6 0	6 6 1	1045.057	7 14E-04	6
10530.7118 P	201	2 2 1	3 2 2	206.301	1 62E-03	6
10531.2572 P	201	6 2 5	6 2 4	602.773	1 34E-04	6
10532.1000 P	121	10 1 9	9 1 8	1079.080	2 9 E-07	50
10532.3680	201	6 3 3	7 1 6	704.214	1 6 E-06	15
10532.6933 P	201	6 1 6	5 3 3	503.968	6 3 E-06	50
10532.8298	300	5 1 4	5 2 3	448.510	1 28E-04	6
10533.4349 B	022	5 4 1	6 3 4	648.978	6 2 E-06	50
10534.8695 P	300	4 0 4	4 1 3	275.497	7 39E-05	6
10534.8487 B	201	8 0 8	7 2 5	782.409	3 4 E-05	50
10534.8813 B	201	8 4 5	8 4 4	1131.776	3 4 E-05	50
10535.7706 P	102	6 1 6	6 4 3	756.724	2 4 E-07	50
10536.1348 P	201	6 4 2	7 2 5	782.409	7 2 E-07	20
10536.6562 P	003	8 2 7	9 4 6	1340.885	7 2 E-07	20
10537.1149 B	300	2 1 2	3 0 3	138.761	5 3 E-06	50
10537.3185	201	3 0 3	3 2 2	206.301	2.12E-04	6
10537.5078	201	7 5 3	7 5 2	1059.835	2 72E-04	6
10537.8775 P	121	8 3 6	7 3 5	816.694	4 4 E-05	15
10538.0815 P	201	7 5 2	7 5 3	1059.647	9.0 E-05	10
10538.9758 P	300	2 1 2	2 2 1	134.902	1.8 E-04	20
10539.5716 P	300	4 4 1	5 3 2	508.812	5 3 E-05	10
10539.7431 P	201	5 1 5	4 3 2	382.516	1 8 E-05	10
10540.0415 B	121	8 2 6	7 2 5	782.409	7 9 E-05	20
10540.4385	201	4 1 4	3 3 1	285.219	2 7 E-06	15
10541.1340 P•	121	5 3 2	5 1 5	326.625	2 7 E-06	50
10542.3453 P	003	5 4 2	6 6 1	1045.057	2 2 E-06	20
10542.6846 P	300	7 5 3	6 6 0	1045.058	4 1 E-06	50
10542.9210	300	1 0 1	2 1 2	79.495	6 81E-04	6
10543.0888 P	300	7 5 2	6 6 1	1045.057	1 1 E-05	50
10543.7832	201	2 0 2	3 0 3	136.761	1 3 E-02	20
10545.1193 P	201	6 5 2	6 5 1	888.632	2.9 E-04	10
10545.2443 P	201	6 5 1	6 5 2	888.598	8 7 E-04	10
10545.3510 P	201	2 1 2	3 1 3	142.278	3 5 E-03	10
10545.5441 B	201	2 0 2	2 2 1	134.902	3 3 E-04	20

Table 2 Can. J. Phys. Cheviland et al. page 6

SIGMA CM-1		VIB	J'KA'KC'			J"KA"KC"			E" CM-1	INTENSITY CM-2 ATM-1	Σ
10545.7292	P•	102	7	3	4	8	4	5	1122.709	1 8 E-05	50
10545.9090	P	300	4	1	3	4	2	2	315.779	6.8 E-05	10
10546.8745	B	300	3	3	1	4	2	2	315.779	4.6 E-05	10
10547.0174	P	201	10	3	7	11	1	10	1524.849	1.2 E-06	50
10547.4567	P	102	6	3	4	7	4	3	931.237	1.2 E-05	15
10548.2419	B	201	5	2	3	4	4	0	488.134	1 0 E-06	50
10548.5505	P	201	9	5	5	10	3	8	1446.128	1 0 E-06	20
10549.1190	P	102	6	2	5	7	3	4	842.356	2.6 E-05	10
10549.2810		201	7	4	4	7	4	3	931.237	3 14E-04	6
10549.7289	P	201	8	3	5	7	5	2	1059.835	5 1 E-06	50
10549.7987	P	121	5	4	2	5	2	3	446.510	3.2 E-05	10
10550.0818		121	7	4	4	6	4	3	758.724	1.22E-04	6
10550.1824		201	4	1	4	4	1	3	275.497	3.49E-04	6
10550.8522	B	102	10	3	8	11	2	9	1690.665	6.75E-06	6
10550.8425	P	300	2	2	1	3	1	2	173.365	4.03E-04	6
10550.9155	P	121	7	4	3	6	4	2	757.780	5.0 E-05	50
10551.2200		102	5	2	3	5	5	0	742.076	3.96E-04	6
10551.6829	P	201	5	5	0	5	5	1	742.073	6.9 E-04	10
10551.7936	P	201	5	5	1	5	5	0	742.076	1.6 E-03	10
10552.1920		300	3	1	2	3	2	1	212.156	2.12E-04	6
10552.4589	P	022	4	4	1	5	3	2	508.812	7.8 E-06	15
10553.1319	B	121	8	3	5	7	3	4	842.356	3.0 E-05	50
10553.4539		300	2	1	1	2	2	0	136.163	4.94E-05	6
10553.8498	P	201	10	1	9	9	3	6	1282.919	2.8 E-06	20
10554.0842		121	9	3	7	8	3	6	1006.116	5.92E-05	6
10554.3180	P	102	6	2	4	6	5	1	888.632	1 0 E-06	20
10555.0834	P	121	9	2	7	8	2	6	982.912	2.0 E-05	10
10555.3892	P	102	7	2	5	7	5	2	1059.835	1.0 E-06	50
10556.0674		201	8	4	4	8	4	5	1122.709	9.94E-05	6
10558.2574		300	3	0	3	3	1	2	173.365	3.90E-04	6
10557.4317	P	201	1	1	0	2	1	1	95.175	2 6 E-03	10
10557.6026	P	201	7	4	3	7	4	4	927.744	1 0 E-04	20
10558.2732		201	5	2	4	5	2	3	446.510	1 07E-03	6
10558.3898	P	201	9	4	5	9	4	6	1340.885	1 2 E-05	50
10558.6313	P	300	8	5	4	7	6	1	1216.193	3 7 E-06	20
10559.0738	P	121	6	5	1	5	5	0	742.076	8 0 E-05	10
10559.1338	P	121	6	5	2	5	5	1	742.073	2.5 E-05	20
10559.2581		201	5	4	3	6	4	2	757.780	3.32E-04	6
10560.0484		201	6	3	4	6	3	3	661.548	2.62E-04	6
10561.8212	P	201	5	4	2	6	4	3	756.724	9.35E-04	6
10562.0114	P	022	3	1	2	3	0	3	136.761	1 5 E-05	50
10562.5129	P	300	3	3	0	4	2	3	300.362	1 3 E-04	50
10562.5494	P	300	0	0	0	1	1	1	37.136	1 4 E-04	50
10563.4640	P	300	1	1	1	2	0	2	70.090	1 2 E-04	10
10563.5994	P	121	5	2	3	4	0	4	222.052	2.9 E-06	50
10563.8716		022	3	1	2	2	2	1	134.902	1 6 E-06	15
10564.5788	P	201	10	4	6	10	4	7	1581.336	4 8 E-06	15
10565.3350	P	300	6	4	2	5	5	1	742.073	1 1 E-06	50
10565.7804	P	201	7	0	7	6	2	4	602.773	5 6 E-06	20
10565.9294	P	102	9	2	7	10	3	8	1446.128	6 2 E-06	50
10566.1118	P	102	6	3	3	7	4	4	927.744	1 2 E-05	50
10566.4094	P	201	1	0	1	2	0	2	70.090	3 7 E-03	10
10566.5390	P	201	5	4	2	5	4	1	610.340	2 4 E-03	10
10567.0172	P	201	5	4	1	5	4	2	610.113	7 3 E-04	10
10567.3391	P	121	10	2	8	9	2	7	1201.921	7 8 E-06	50
10567.9205		201	1	1	1	2	1	2	79.495	8 0 E-03	10
10568.0728	P	102	5	1	5	5	4	2	610.113	6 8 E-05	20
10568.9821	P	121	6	3	3	6	1	6	447.252	3 4 E-06	20
10569.4177	P	121	8	4	5	7	4	4	927.744	2 7 E-05	15
10569.6578	P	201	4	3	1	5	1	4	399.457	1 2 E-06	50
10570.5378	B	121	3	3	1	2	1	2	79.495	2 8 E-06	50
10571.3021		300	2	0	2	2	1	1	95.175	1 60E-04	6
10571.4517		300	4	2	2	5	1	5	326.625	2 45E-05	6
10571.7343	P	121	5	4	4	7	4	3	931.237	7 8 E-05	10
10572.1622	P	201	4	4	1	4	4	0	488.134	2 0 E-03	20
10572.2262	P	201	4	4	0	4	4	1	488.107	5 5 E-03	10
10572.7846	P	121	4	3	1	3	1	2	173.365	9 7 E-06	50
10572.9175	B	102	4	4	0	5	5	1	742.073	4 1 E-05	20
10572.9175	B	102	4	4	1	5	5	0	742.076	4.1 E-05	20
10573.6887		300	3	2	1	4	1	4	224.838	1.41E-04	6
10573.8952		201	3	1	3	3	1	2	173.365	2 08E-03	6
10574.5472		201	5	3	3	5	3	2	508.812	2.01E-03	6
10574.9979	P	201	6	2	4	5	4	1	610.340	7 7 E-06	20
10575.4145	B	102	5	1	5	6	2	4	602.773	2.2 E-08	50
10576.1465	P	300	5	2	3	6	1	6	447.252	2.8 E-05	15
10576.3176	P	022	3	0	3	2	1	2	79.495	1.5 E-05	15
10576.7712	P	300	8	4	5	9	1	8	1079.080	2 7 E-06	50
10577.0033	P•	121	4	4	0	4	2	3	300.362	5 3 E-08	50
10577.0551	P	300	9	5	4	8	6	3	1411.812	2 1 E-06	50
10578.7568		201	4	2	3	4	2	2	315.779	8 93E-04	6
10579.0029	P	121	7	5	2	6	5	1	888.632	2 37E-05	6
10579.3733		121	7	5	3	6	5	2	888.598	7 12E-05	6
10580.0460		300	1	0	1	1	1	0	42.371	4 54E-04	6
10580.3440	P	121	5	4	1	5	2	4	416.208	3 1 E-06	50
10580.8595	P	201	9	4	6	10	2	9	1293.634	1 8 E-06	50
10580.9348	P	102	5	3	3	6	4	2	757.780	5 5 E-06	15
10581.5685	B	003	6	3	4	7	5	3	1059.847	3 9 E-07	50
10583.2048	P	300	2	2	0	3	1	3	142.278	5.0 E-05	10
10583.5955		201	4	3	2	4	3	1	383.842	1 65E-03	6
10584.3093	P	300	5	3	3	4	4	0	488.134	3 0 E-06	15
10584.8248	P	201	9	1	8	8	3	5	1050.157	4 9 E-06	15
10585.3792		201	5	3	2	5	3	3	503.988	6.31E-04	6
10585.8430	P	003	5	0	5	6	4	2	757.780	4 4 E-06	20
10586.2024	P	022	6	4	2	5	5	1	742.073	6 5 E-06	50
10586.2745	B	201	8	4	5	9	2	8	1080.385	6 1 E-06	10
10586.2745	B	300	6	2	4	7	1	7	586.479	6 7 E-06	10
10586.5999	P	201	4	3	1	4	3	2	382.516	4 8 E-03	10
10587.2290	P	121	6	4	2	6	2	5	552.911	7 1 E-06	50
10587.2680	P•	300	7	4	4	8	1	7	882.891	4 5 E-06	50
10587.6024	P	201	6	3	3	6	3	4	648.978	6 65E-04	6
10588.6198	P	201	4	1	3	3	3	0	285.418	3 0 E-05	50
10589.0976	P	201	3	3	1	3	3	0	285.418	1 1 E-02	10
10589.5604	B	201	3	3	0	3	3	1	285.219	1 0 E-02	20
10589.5604	B	201	0	0	0	1	0	1	23.794	1 0 E-02	20
10589.5604	B	300	5	3	2	4	4	1	488.107	1 0 E-02	20
10589.9273	P	201	6	0	6	5	2	3	446.510	3 9 E-05	10
10590.5654	P	121	9	5	5	9	3	6	1282.919	2 8 E-06	50
10591.1361	P	022	2	2	1	2	1	2	79.495	7 0 E-06	15
10591.2281	P	201	7	5	3	8	3	6	1006.116	3 1 E-06	20
10591.4885	B	201	6	5	1	7	3	4	842.356	2 3 E-06	50
10592.4537		201	2	1	2	2	1	1	95.175	1 40E-03	6
10592.8680	P	201	3	2	2	3	2	1	212.156	6 2 E-03	10
10593.8731		201	7	3	4	7	3	5	816.694	6 37E-05	6
10594.0908	P	300	8	2	7	7	3	4	842.356	2.5 E-06	20
10594.5726		201	10	3	7	9	5	4	1477.297	1 7 E-06	15
10594.8983	P	201	7	4	4	8	2	7	885.600	2 3 E-06	15
10596.0097		300	8	4	5	7	5	2	1059.835	1 85E-05	6
10597.4086	P	201	7	2	5	6	4	2	757.780	2.5 E-06	20
10597.8073		300	4	2	3	3	3	0	285.418	1 75E-05	6
10598.1214	P	102	9	1	8	10	2	9	1293.634	6 66E-06	6
10598.6475	P	003	6	3	3	7	5	2	1059.835	3.1 E-06	50
10599.0936	P	201	6	2	4	7	0	7	586.243	3 7 E-06	50
10599.2813	P	201	3	3	0	4	1	3	275.497	1 0 E-06	50
10599.4553		121	8	5	3	7	5	2	1059.835	2 65E-05	6
10599.6585	P	300	7	2	5	8	1	8	744.163	3 8 E-06	15
10599.7654	P	102	5	2	4	6	3	3	661.548	8 3 E-06	15
10600.8494		201	2	2	1	2	2	0	136.163	4 63E-03	6
10601.1666	P	300	6	3	4	5	4	1	610.340	1 8 E-05	10
10601.6703	P	201	2	2	0	3	0	3	136.761	1 8 E-05	10
10601.8903	P	300	6	4	3	7	1	6	704.214	5 0 E-06	15
10602.8694	P	121	4	3	2	3	1	3	142.278	6 6 E-06	50
10603.5297	P	201	2	2	0	2	2	1	134.902	1 4 E-02	10
10605.0451	P	201	1	1	1	1	1	0	42.371	1 0 E-02	10
10605.1817	P	201	3	2	1	3	2	2	206.301	2 1 E-03	10
10605.9035	P	201	5	0	5	4	2	2	315.779	3 1 E-05	10
10606.1001		022	4	1	4	3	0	3	136.761	2 44E-05	6
10607.1566	B	300	7	2	6	6	3	3	661.548	2 0 E-05	20
10607.1566	B	201	8	1	7	7	3	4	842.356	2 0 E-05	20
10607.2563	P	300	8	4	4	7	5	3	1059.847	1 9 E-06	50
10607.4590		201	3	0	3	2	2	0	136.163	5 02E-05	6
10607.6808	B	300	10	3	8	9	4	5	1360.235	1 1 E-05	15
10607.6808	B	003	7	0	7	8	2	6	982.912	1 1 E-05	15
10609.1096		102	7	2	5	8	3	6	1006.116	1 13E-05	6
10610.7394		201	4	2	2	4	2	3	300.362	2 45E-03	6
10611.1278	P	201	7	2	5	8	0	8	744.064	3 6 E-05	50
10611.7042	P	300	6	2	5	5	3	2	508.812	1 8 E-06	15
10611.9686	P	201	4	0	4	3	2	1	212.156	1 60E-04	6
10612.2225	B	003	8	2	6	9	4	5	1360.235	2 83E-05	6
10612.2225	B	201	5	1	4	4	3	1	383.842	2 83E-05	6
10612.7461		102	4	3	2	5	4	1	610.340	4 26E-05	6
10612.8520	P	300	4	2	2	3	3	1	285.219	1 8 E-06	50
10613.2162		300	9	3	6	9	2	7	1201.921	9 95E-06	6
10614.6721	P•	300	6	3	3	5	4	2	610.113	6 3 E-06	50
10614.7164	P	102	4	3	1	5	4	2	610.113	1 8 E-05	20
10614.7858	P	300	7	3	5	6	4	2	757.780	9 2 E-06	50
10615.2789	P	300	1	1	0	1	0	1	23.794	6 4 E-04	10
10615.4704	P	201	1	1	0	1	1	1	37.136	3 2 E-03	10
10616.3155	P	300	8	3	5	8	2	6	982.912	1 4 E-05	15
10616.4549	B	300	7	3	4	7	2	5	782.409	8 44E-05	6
10616.4549	B	201	7	6	2	8	4	5	1122.709	8 44E-05	6
10616.6036	P	022	8	3	6	7	4	3	931.237	3 9 E-06	50
10616.7469	P	300	8	4	4	8	3	5	1050.157	1 2 E-05	15
10617.2784	P	121	7	6	2	6	6	1	1045.057	2 19E-05	6
10617.3864	P	121	7	6	1	6	6	0	1045.058	7 36E-06	6
10618.3228	P	121	9	5	5	8	5	4	1255.166	2 14E-05	6
10618.4997	P	102	8	3	6	9	2	7	1201.921	7 03E-06	6
10618.9442	B•	003	5	3	2	6	5	1	888.632	6 3 E-07	50
10619.5268	P	300	2	1	1	2	0	2	70.090	2 43E-04	6
10619.9501	B	201	7	1	6	6	3	3	661.548	1 9 E-05	50
10620.1688	P	201	5	2	3	5	2	4	416.208	3 0 E-04	10
10621.0709	P	201	6	1	5	5	3	2	508.812	8 42E-05	6
10622.0062	B	201	8	2	6	9	0	9	920.189	7 1 E-05	20
10622.0062	B	300	5	3	3	6	2	4	602.773	7 1 E-05	20
10622.5805	B	300	4	2	2	4	1	3	275.497	1 9 E-04	10
10622.5805	B	300	5	4	2	6	1	5	542.905	1 9 E-04	10
10623.5873	P	201	2	1	1	2	1	2	79.495	4 0 E-03	10
10623.9422	P	300	5	2	3	5	1	4	399.457	3 73E-04	6
10625.1622	P	300	3	2	1	3	1	2	173.365	7 5 E-04	10
10625.4787	P	102	8	1	7	9	2	8	1080.385	7 4 E-06	20
10625.6140	P	121	7	5	3	7	3	4	842.356	1 7 E-06	20
10625.7420	B	300	5	3	3	6	0	6	446.897	5 8 E-06	20
10625.7420	B	201	10	3	7	10	3	8	1446.128	5 8 E-06	20
10626.2597	P	102	6	2	4	7	3	5	816.694	6 9 E-06	20
10626.5574	P	102	8	5	4	8	6	3	1411.812	2 5 E-06	15
10627.5864		300	3	1	2	3	0	3	136.761	5 66E-04	6
10628.2620	P	022	2	2	1	1	1	0	42.371	1 69E-05	6
10628.4358	P	300	9	5	4	9	4	5	1360.235	1 1 E-05	20
10629.0682		102	9	0	9	10	1	10	1114.549	1 86E-05	6
10629.3410	P	300	2	0	2	1	1	1	37.136	4 9 E-05	10
10629.4428	P	300	3	1	2	2	2	1	134.902	2 7 E-06	10

Table 2 Can. J. Phys. Chevillard et al. page 7

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10629.8487	300	6 2 4	6 1 5	542.905	6.55E-05	6
10630.3074	300	2 2 0	2 1 1	95.175	1.93E-04	6
10630.8258 P	300	4 3 2	5 0 5	325.347	9.7 E-06	20
10630.9949 P	300	8 7 2	8 6 3	1411.812	6.4 E-06	50
10631.1590 P	300	5 3 2	5 2 3	446.510	3.7 E-04	20
10631.4120 P	300	9 4 5	8 5 4	1255.166	3.5 E-06	50
10631.6995 P	300	7 4 3	7 3 4	842.356	8.21E-05	6
10632.4289	201	6 2 4	6 2 5	552.911	2.99E-04	6
10633.5549	300	1 1 1	0 0 0	0.000	8.05E-04	6
10634.1280	003	4 0 4	5 4 1	610.340	1.8 E-06	15
10635.0153 P	102	4 1 4	5 2 3	448.510	1.8 E-05	20
10635.2805 P	201	3 1 2	3 1 3	142.278	5.52E-04	6
10635.9686 P	102	7 5 2	7 6 1	1218.193	3.5 E-06	15
10636.1158 B	201	5 3 3	6 1 6	447.252	5.4 E-06	20
10636.1158 B	102	7 5 3	7 6 2	1218.189	5.4 E-06	20
10636.5003	201	1 0 1	0 0 0	0.000	1.99E-03	6
10637.0716 B	201	7 3 5	8 1 8	744.163	3.2 E-06	50
10639.8291 B	300	4 1 3	4 0 4	222.052	1.8 E-04	50
10640.0566 P	003	4 3 2	5 5 1	742.073	6.8 E-07	50
10640.6018 P	300	3 3 1	4 0 4	222.052	1.8 E-06	15
10640.8816 P	300	5 2 3	4 3 2	382.516	9.0 E-06	20
10640.9245 P•	201	8 3 6	9 1 9	920.211	2.4 E-06	50
10641.5887 P	102	3 3 1	4 4 0	488.134	5.1 E-05	50
10641.6441 P	300	4 3 1	4 2 2	315.779	1.34E-04	6
10642.1357 B	300	7 3 4	6 4 3	758.724	1.3 E-05	50
10642.1357 B	102	6 5 1	6 6 0	1045.058	1.3 E-05	50
10643.9250	201	6 6 0	7 4 3	931.237	4.4 E-06	15
10644.3178 B	102	5 2 3	6 3 4	648.978	3.3 E-05	50
10644.7121	300	2 2 1	2 1 2	79.495	5.47E-04	6
10644.8960 P	201	5 5 1	6 3 4	648.978	8.5 E-06	10
10645.5917 P	201	7 2 5	7 2 6	709.608	2.3 E-05	10
10645.8559 B	300	6 4 2	6 3 3	661.548	5.2 E-05	50
10648.9305 B	300	4 4 1	5 1 4	399.457	2.9 E-06	50
10649.2024	201	4 1 3	4 1 4	224.838	6.67E-04	6
10649.7291 P	300	8 4 5	8 3 6	1006.116	4.1 E-05	10
10650.0830 P	300	2 1 2	1 0 1	23.794	2.1 E-03	10
10650.1020 B•	300	3 0 3	2 1 2	79.495	4.1 E-04	50
10650.4217 P	300	3 2 2	3 1 3	142.278	3.8 E-04	50
10650.4924 P	201	2 1 2	1 1 1	37.136	3.4 E-03	10
10650.7189	300	3 3 0	3 2 1	212.156	4.06E-04	6
10650.9386 P	121	7 5 2	7 3 5	816.694	9.0 E-06	50
10651.0810 P	300	8 2 6	8 1 7	882.891	1.6 E-05	20
10651.3959 P	022	7 3 5	7 2 6	709.608	6.4 E-06	20
10651.4892 P	102	7 1 6	8 [illegible] 7	885.600	3.4 E-05	10
10652.1212 P	300	8 5 4	8 4 5	1122.709	3.2 E-05	10
10652.1689 P•	121	6 5 1	6 3 4	648.978	4.0 E-06	50
10653.1745 P	121	8 5 3	8 3 6	1006.116	7.9 E-06	15
10653.4684 P	300	7 4 4	7 3 5	816.694	2.8 E-05	10
10653.9925	300	5 1 4	5 0 5	325.347	2.6 E-04	10
10654.1989 B	102	8 1 8	9 0 9	920.169	6.9 E-05	20
10654.5165 P	121	5 5 0	5 3 3	503.968	8.8 E-07	50
10655.3906 P	300	4 1 3	3 2 2	206.301	3.5 E-06	50
10655.6114	300	4 3 2	4 2 3	300.362	5.25E-04	6
10656.2314	300	5 3 3	5 2 4	416.208	1.41E-04	6
10656.3534	300	3 3 1	3 2 2	206.301	1.27E-04	6
10656.7507 P	201	2 0 2	1 0 1	23.794	1.2 E-02	10
10656.9091 B	300	5 4 1	5 3 2	508.812	4.2 E-04	50
10656.9091 B	300	7 5 2	7 4 3	931.237	4.2 E-04	50
10657.0694 P	022	7 4 3	7 3 4	842.356	1.4 E-05	50
10657.1261 P	300	6 4 3	6 3 4	648.978	1.7 E-04	10
10657.5508 B	201	8 7 2	7 7 1	1394.813	3.11E-05	6
10657.5508 B	201	8 7 1	7 7 0	1394.813	3.11E-05	6
10657.5508 B	102	7 2 6	8 1 7	882.891	3.11E-05	6
10658.3878	300	4 2 3	4 1 4	224.838	8.84E-04	6
10658.5961 P	300	6 3 4	6 2 5	552.911	2.57E-04	6
10659.9753 B	300	7 5 3	7 4 4	927.744	4.9 E-05	15
10659.9753 B	102	10 3 8	10 4 7	1581.336	4.9 E-05	15
10659.9753 B	300	9 2 7	9 1 8	1079.080	4.9 E-05	15
10660.2301 P	300	8 6 3	8 5 4	1255.166	2.2 E-05	50
10660.7121 P	201	2 1 1	1 1 0	42.371	9.9 E-03	10
10661.5175 B	300	5 4 2	5 3 3	503.968	7.9 E-05	20
10662.2425	022	8 3 6	8 2 7	885.600	2.1 E-05	15
10662.3605 P	300	5 2 4	5 1 5	328.625	8.3 E-06	15
10662.8007 P	201	11 4 8	11 2 9	1890.665	1.8 E-06	20
10662.9593	300	7 3 5	7 2 6	709.608	5.38E-05	6
10663.4655	300	3 1 3	2 0 2	70.090	4.92E-04	6
10663.5252 P	102	4 2 2	5 3 3	503.968	2.4 E-05	50
10664.5703 P	300	4 4 0	4 3 1	383.842	7.65E-05	6
10665.8663	300	4 4 1	4 3 2	382.518	2.35E-04	6
10666.2516 P	300	6 5 1	6 4 2	757.780	3.20E-05	6
10666.7233 P	022	6 4 2	6 3 3	661.548	7.7 E-06	20
10666.9224 P	201	2 2 1	2 0 2	70.090	8.4 E-05	10
10667.2057 P	300	6 5 2	6 4 3	758.724	1.0 E-04	10
10667.7847 P	201	3 1 3	2 1 2	79.495	1.4 E-02	10
10667.8873 P	300	4 0 4	3 1 3	142.278	1.9 E-04	20
10668.2070 P	300	6 1 5	6 0 6	446.897	4.9 E-05	50
10668.2629 B	003	5 2 4	6 4 3	758.724	5.35E-04	6
10668.2629 B	201	3 2 2	3 0 3	138.761	5.35E-04	6
10668.7874 P	300	6 2 4	5 3 3	503.968	7.1 E-06	10
10669.4388	201	5 1 4	5 1 5	328.625	2.54E-04	6
10669.5222 P	300	8 3 6	8 2 7	885.600	8.1 E-05	20
10670.1227	201	3 2 2	2 2 1	134.902	7.09E-03	6
10670.9814 P	121	5 4 2	5 0 5	325.347	1.2 E-05	20
10671.0434 P	121	4 4 1	3 2 2	206.301	2.9 E-06	50
10671.4842 P	300	8 3 5	7 4 4	927.744	3.1 E-06	50

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10672.4839	201	4 2 3	4 0 4	222.052	1.94E-04	6
10672.5899 P	201	9 4 6	9 2 7	1201.921	9.4 E-06	50
10673.2360 P	300	5 5 0	5 4 1	610.340	1.14E-04	6
10673.4582 P	300	5 5 1	5 4 2	610.113	7.9 E-05	50
10673.5304 P	201	3 0 3	2 0 2	70.090	5.0 E-03	10
10674.2817 P	300	10 3 8	10 2 9	1293.634	4.8 E-06	20
10675.1427 P	300	4 1 4	3 0 3	136.761	1.10E-03	6
10675.3197 P	201	3 2 1	2 2 0	136.163	2.30E-03	6
10677.0157 B	201	7 3 5	7 1 6	704.214	1.4 E-04	50
10677.0157 B	102	3 2 2	4 3 1	383.842	1.4 E-04	50
10677.0704 P	300	6 6 1	6 5 2	888.598	6.2 E-05	20
10677.4564 P	022	4 4 0	4 3 1	383.842	1.3 E-05	15
10677.9259 B•	102	8 5 4	9 4 5	1360.235	3.4 E-06	50
10678.2492 B	201	8 3 6	8 1 7	882.891	2.4 E-05	10
10678.2492 B	022	5 4 2	5 3 3	503.968	2.4 E-05	10
10678.6353 P	121	6 3 4	5 1 5	326.625	2.5 E-06	50
10678.6922 P	201	6 3 4	6 1 5	542.905	3.7 E-05	10
10678.7582 P	022	4 4 1	4 3 2	382.516	3.7 E-05	10
10678.9823 B	300	5 1 4	4 2 3	300.362	8.4 E-06	20
10679.2162 P	003	6 2 4	7 4 3	931.237	2.9 E-06	50
10679.4357	201	5 2 4	5 0 5	325.347	4.25E-04	6
10680.1729	102	7 0 7	8 1 8	744.163	9.41E-05	6
10680.4681	102	7 1 7	8 0 8	744.064	3.46E-05	6
10680.7403 P	300	7 1 6	7 0 7	586.243	6.1 E-05	10
10681.8367 P	300	2 2 1	1 1 0	42.371	8.2 E-05	20
10682.2187 B	300	7 2 6	7 1 7	586.479	1.2 E-03	20
10682.2187 B	201	4 3 2	3 3 1	285.219	1.2 E-03	20
10682.3828 B•	300	8 7 2	9 4 5	1360.235	4.4 E-03	10
10682.3828 B	201	3 1 2	2 1 1	95.175	4.4 E-03	10
10682.6292 B	201	6 1 5	6 1 6	447.252	5.6 E-04	50
10682.8493 B	300	5 0 5	4 1 4	224.838	5.27E-04	6
10682.8493 B	102	7 4 3	7 5 2	1059.835	5.27E-04	6
10683.0852 P	003	8 6 2	9 6 3	1631.384	5.4 E-06	50
10683.3812 P	201	4 1 4	3 1 3	142.278	5.0 E-03	10
10683.6981 P	201	4 3 1	3 3 0	285.418	3.5 E-03	10
10683.9014 P	201	5 3 3	5 1 4	399.457	1.32E-04	6
10684.3406 P	220	7 3 5	5 0 5	446.697	2.9 E-06	50
10684.8292	102	3 2 1	4 3 2	382.516	1.07E-03	6
10685.8039 B	003	7 7 0	8 7 1	1590.690	2.5 E-06	20
10685.8039 B	003	7 7 1	8 7 2	1590.690	2.6 E-06	20
10686.0820 P	102	6 4 2	6 5 1	888.632	4.8 E-06	50
10686.3151 P	300	5 1 5	4 0 4	222.052	2.8 E-04	20
10686.8312 P	201	10 3 8	10 1 9	1293.019	5.4 E-06	20
10686.9255 P	201	10 2 8	10 2 9	1293.634	1.6 E-05	20
10687.3630 P	201	4 0 4	3 0 3	136.761	1.5 E-02	10
10688.2346 P	201	4 2 3	3 2 2	206.301	3.0 E-03	10
10688.3453 P	300	2 2 0	1 1 1	37.136	5.4 E-05	20
10688.7726	201	5 4 2	4 4 1	488.107	1.13E-03	6
10688.9976	201	5 4 1	4 4 0	488.134	3.98E-04	6
10690.0538	102	5 1 5	4 4 0	488.134	3.10E-05	6
10690.2471 P	102	5 4 2	5 5 1	742.073	9.3 E-07	50
10690.2986 B	102	5 4 1	5 5 0	742.076	1.6 E-06	50
10691.2763 B	121	8 3 5	7 1 6	704.214	1.6 E-06	50
10691.2763 B	102	8 0 8	8 1 7	882.891	1.6 E-06	50
10691.3982 P	300	8 1 7	8 0 8	744.064	6.4 E-06	15
10691.6787	201	6 5 2	5 5 1	742.073	1.04E-04	6
10691.7665	201	6 5 1	5 5 0	742.076	7.88E-04	6
10691.9412 P	201	4 3 2	4 1 3	275.497	3.0 E-05	15
10692.1502 P	201	11 3 9	11 1 10	1524.849	3.3 E-06	15
10692.2852 B	300	8 2 7	8 1 8	744.163	1.6 E-05	20
10692.4289	300	9 3 6	9 4 5	1122.709	4.5 E-06	15
10693.0649 B	003	10 3 7	11 3 8	1813.223	1.3 E-05	50
10693.1957 P	201	12 2 10	12 2 11	1774.751	1.2 E-06	50
10693.3797 P	121	6 4 3	6 0 6	446.697	6.2 E-06	15
10693.6286 B	121	6 4 2	5 2 3	446.510	1.4 E-06	50
10694.1164 B	201	7 6 1	6 6 0	1045.058	1.3 E-04	10
10694.1164 B	201	7 6 2	6 6 1	1045.057	1.3 E-04	10
10694.8433 P	300	7 2 5	6 3 4	648.978	8.3 E-06	15
10695.0202 P	201	7 1 6	7 1 7	586.479	6.8 E-05	15
10695.7234	300	6 0 6	5 1 5	328.625	1.54E-04	6
10695.9568 B•	121	5 4 2	4 2 3	300.362	1.4 E-04	50
10696.2831 P	102	6 3 4	7 2 5	782.409	1.5 E-05	20
10696.3772 P	102	5 1 4	6 2 5	552.911	8.6 E-05	10
10696.8986	201	7 2 6	7 0 7	586.243	1.55E-04	6
10697.2478 P	300	6 1 6	5 0 5	325.347	8.1 E-04	10
10697.4172 P	201	5 1 5	4 1 4	224.838	1.3 E-02	10
10698.0910 B	201	7 4 4	7 2 5	782.409	1.3 E-05	50
10698.2183 P	003	9 5 5	10 5 6	1718.718	4.7 E-06	20
10698.6988 P	300	6 1 5	5 2 4	416.208	3.1 E-05	50
10698.9454 P	201	4 2 2	3 2 1	212.156	8.4 E-03	10
10699.8303 P	201	5 0 5	4 0 4	222.052	4.2 E-03	10
10700.6725 P	201	4 1 3	3 1 2	173.365	1.1 E-02	20
10700.8424 P	201	5 3 3	4 3 2	382.516	4.1 E-03	10
10701.1504 P	201	3 3 1	3 1 2	173.365	3.7 E-05	10
10701.4271 P	003	5 2 3	6 4 2	757.780	6.5 E-06	50
10701.5824 P•	102	8 2 7	8 3 6	1006.116	5.8 E-06	50
10703.3473 P	003	4 2 3	5 4 2	610.113	2.4 E-06	50
10704.4213 P	201	5 2 4	4 2 3	300.362	7.3 E-03	20
10705.3505	201	8 1 7	8 1 8	744.163	7.23E-05	6
10705.5050	201	5 3 2	4 3 1	383.842	1.22E-03	6
10705.8250 P	102	6 0 6	7 1 7	586.479	7.0 E-05	50
10706.0224 P	121	7 4 3	6 2 4	602.773	2.9 E-06	50
10706.1487 P	201	8 2 7	8 0 8	744.064	2.6 E-05	10
10706.2553 P	102	6 1 6	7 0 7	586.243	1.7 E-04	10
10706.6559 P	003	11 2 10	12 2 11	1774.751	4.4 E-06	50

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SIGMA CM-1	V1B	J KA KC	J KA KC	E CM-1	INTENSITY CM-2 ATM-1	%
10706.9289 B•	300	7 0 7	6 1 6	447.252	5.3 E-04	50
10706.9289 B	201	6 4 3	5 4 2	610.113	5.3 E-04	50
10707.0340 P	102	2 2 1	3 3 0	285.418	1.6 E-04	10
10707.7014	300	7 1 7	6 0 6	446.697	1.38E-04	6
10707.9565 P•	003	6 1 5	7 3 4	842.356	4.2 E-06	50
10708.0689 P•	300	10 2 9	10 1 10	1114.549	1.2 E-05	50
10708.2047	201	6 4 2	5 4 1	610.340	1.32E-03	6
10708.6618 P	102	2 2 0	3 3 1	285.219	4.8 E-06	10
10708.7451 P	201	7 5 3	6 5 2	888.598	3.2 E-04	10
10709.0754 P	201	7 5 2	6 5 1	888.632	1.1 E-04	10
10709.8603 P	300	4 2 3	3 1 2	173.365	1.18E-03	6
10710.0288 P	201	6 1 6	5 1 5	328.625	3.2 E-03	10
10710.2882 B	201	8 6 2	7 6 1	1216.193	6.4 E-05	10
10710.2882 B	201	8 6 3	7 6 2	1216.189	6.4 E-05	10
10711.0898 P	201	6 0 6	5 0 5	325.347	9.5 E-03	10
10713.4897	300	5 2 4	4 1 3	275.497	1.56E-03	6
10714.0724 P	300	7 1 6	6 2 5	552.911	4.8 E-05	10
10714.2644 P	201	6 4 3	6 2 4	602.773	3.9 E-06	15
10714.6369	201	2 2 0	1 0 1	23.794	2.62E-04	6
10714.7788 B	201	9 1 8	9 1 9	920.211	4.5 E-05	20
10714.7788 B	201	9 2 8	9 0 9	920.169	4.5 E-05	20
10714.9207 P	102	7 1 7	7 2 6	709.608	2.0 E-06	50
10715.3137 B	102	4 1 3	5 2 4	416.208	3.9 E-05	50
10715.5170 B	003	7 6 2	8 6 3	1411.612	4.7 E-06	15
10715.5170 B	003	7 6 1	8 6 2	1411.646	4.7 E-06	15
10716.6802	300	8 1 8	7 0 7	586.243	1.70E-04	6
10717.0430	300	8 0 8	7 1 7	586.479	6.54E-05	6
10717.2818 P	300	8 2 6	7 3 5	816.694	2.7 E-06	50
10717.6291	201	6 3 4	5 3 3	503.968	9.74E-04	6
10717.8217	201	6 2 5	5 2 4	416.208	1.65E-03	6
10718.4101 P	102	5 2 4	6 1 5	542.905	2.7 E-05	15
10718.7372	003	9 4 6	10 4 7	1581.336	4.5 E-06	15
10719.0313 P	300	3 2 1	2 1 2	79.495	2.01E-05	6
10720.2528 P	201	7 1 7	6 1 6	447.252	3.7 E-03	10
10720.5874 B	201	5 2 3	4 2 2	315.779	3.9 E-03	50
10721.0576	300	6 2 5	5 1 4	399.457	1.15E-03	6
10721.2039 P•	003	4 2 2	5 4 1	610.340	1.4 E-05	50
10721.8562 P	201	7 0 7	6 0 6	446.697	2.0 E-03	10
10722.2182 P	201	10 1 9	10 1 10	1114.549	1.8 E-05	15
10723.0667	121	7 3 5	6 1 6	447.252	2.54E-03	6
10723.7733 P	201	7 4 4	6 4 3	758.724	8.9 E-04	20
10723.8678 P	121	6 4 3	5 2 4	416.208	1.8 E-04	20
10724.7780 P	201	8 5 4	7 5 3	1059.647	6.6 E-05	20
10724.8405 P•	003	9 3 6	10 3 7	1538.150	3.5 E-06	50
10725.6709	300	9 0 9	8 1 8	744.163	9.51E-05	6
10725.7885 P	300	7 2 6	6 1 5	542.905	8.0 E-05	10
10725.8739 B•	300	9 1 9	8 0 8	744.064	2.63E-04	6
10725.8739 B	201	8 5 3	7 5 2	1059.835	2.63E-04	6
10725.8739 B	201	9 6 4	8 6 3	1411.612	2.63E-04	6
10725.9689 P	201	9 6 3	8 6 2	1411.646	3.4 E-05	10
10726.1115	300	3 3 0	3 0 3	136.761	1.37E-05	6
10726.4905	300	3 3 1	2 2 0	136.163	4.28E-05	6
10727.5661 P	201	7 4 3	6 4 2	757.780	2.5 E-04	20
10727.7700 P	201	6 3 3	5 3 2	508.812	2.9 E-03	10
10727.9706 P	300	3 3 0	2 2 1	134.902	1.32E-04	6
10728.6005 P	102	5 3 3	5 4 2	610.113	3.4 E-06	15
10729.0949 P	201	11 2 10	11 0 11	1327.109	8.2 E-06	20
10729.1286 B•	102	9 2 7	9 3 6	1282.919	4.7 E-06	50
10729.1286 B	201	11 1 10	11 1 11	1327.119	4.7 E-06	50
10729.4562 P	102	7 5 2	8 4 5	1122.709	4.1 E-06	20
10730.1093 B	102	5 0 5	6 1 6	447.252	3.9 E-04	20
10730.2291 P	201	7 2 6	6 2 5	552.911	3.4 E-03	10
10730.4254 P	201	6 1 5	5 1 4	399.457	4.9 E-03	10
10731.0123 P	201	8 0 8	7 0 7	586.243	3.2 E-03	10
10731.1871 P	102	2 1 2	3 2 1	212.156	8.3 E-05	10
10731.4003 P	201	8 1 8	7 1 7	586.479	1.2 E-03	10
10731.4914 P	102	5 1 5	6 0 6	446.697	7.8 E-05	10
10731.6028 P	102	6 4 3	7 3 4	842.356	9.0 E-06	20
10732.2537 P	201	7 3 5	6 3 4	648.978	2.04E-03	6
10732.4918 P	201	3 3 0	3 1 3	142.278	4.1 E-06	10
10732.9388 P	300	9 2 7	8 3 6	1006.116	1.9 E-06	50
10733.5779 B	102	3 1 2	4 2 3	300.362	1.5 E-04	50
10734.4301	003	3 2 2	4 4 1	488.107	2.8 E-06	15
10734.9770 P	102	4 3 2	4 4 1	488.107	1.1 E-05	15
10735.1439 P	300	9 1 8	8 2 7	885.600	4.2 E-05	15
10735.3784 B	102	5 3 2	5 4 1	610.340	1.7 E-05	20
10735.9421 P	102	5 3 3	6 2 4	602.773	4.4 E-06	20
10736.0751	102	6 3 3	6 4 2	757.780	2.7 E-05	50
10736.2076	121	8 2 6	7 0 7	588.243	3.72E-04	6
10736.5606	102	7 4 3	8 3 6	1006.116	4.3 E-08	10
10736.6918 P	102	4 3 1	4 4 0	488.134	3.5 E-06	10
10737.2100 P	102	7 3 4	7 4 3	931.237	4.3 E-06	15
10737.4987	102	9 0 9	8 1 8	1006.116	3.8 E-06	15
10738.5943 P	201	7 1 6	6 1 5	542.905	1.1 E-03	10
10738.8295 P	201	6 2 4	5 2 3	446.510	4.4 E-03	10
10738.9127 P	201	8 4 5	7 4 4	927.744	4.4 E-04	20
10739.0929 B	003	11 1 11	12 1 12	1557.849	1.1 E-05	10
10739.0929 B	003	11 0 11	12 0 12	1557.844	1.1 E-05	10
10739.5115 P	201	9 5 5	8 5 4	1255.186	8.9 E-05	10
10739.5841 P	102	6 1 6	6 2 5	552.911	1.5 E-05	50
10739.9230 P	201	13 2 12	13 0 13	1808.671	2.8 E-06	50
10740.3282	201	9 1 9	8 1 8	744.163	2.04E-03	6
10740.5507 P	201	9 0 9	8 0 8	744.064	8.1 E-04	20
10740.8029 P	201	8 2 7	7 2 6	709.608	6.6 E-04	20
10740.8509 P	003	5 0 5	5 2 4	602.773	6.6 E-06	50

SIGMA CM-1	V1B	J KA KC	J KA KC	E CM-1	INTENSITY CM-2 ATM-1	%
10741.3925	201	3 2 1	2 0 2	70.090	1.86E-04	6
10741.9285 P	003	4 1 4	5 3 3	503.968	1.4 E-06	15
10742.2843 P	003	12 0 12	12 2 11	1774.751	3.9 E-07	50
10742.3398 P	003	9 3 7	10 3 8	1446.128	7.7 E-06	15
10742.4975 B	003	8 4 4	9 4 5	1360.235	2.3 E-05	20
10742.4975 B	102	6 2 5	6 3 4	648.978	2.3 E-05	20
10742.5701 P	201	9 5 4	8 5 3	1255.912	3.1 E-05	15
10743.5292 B	003	7 3 5	7 5 2	1059.835	2.8 E-05	15
10743.5292 B	300	10 2 9	9 1 8	1079.080	2.8 E-05	15
10743.8187 P	300	4 3 2	3 2 1	212.156	9.3 E-07	20
10744.2798 P	201	4 3 1	4 1 4	224.838	8.1 E-06	10
10744.4442 P	201	8 3 6	7 3 5	816.694	3.4 E-04	20
10745.2989 P	201	8 1 7	7 1 6	704.214	1.79E-03	6
10747.3997 P	003	8 4 5	9 4 6	1340.885	6.8 E-06	50
10747.5395 P	201	8 4 4	7 4 3	931.237	4.6 E-04	10
10747.6645 B	003	6 6 0	7 6 1	1216.193	8.8 E-06	20
10747.6645 B	003	6 6 1	7 6 2	1216.189	8.8 E-06	20
10748.5138 P	201	10 1 10	9 1 9	920.211	4.1 E-04	50
10748.5148 P	201	10 0 10	9 0 9	920.169	9.8 E-04	20
10749.0170	201	7 3 4	6 3 3	661.548	6.78E-04	6
10749.2089 P	102	6 0 6	6 1 5	542.905	9.4 E-06	20
10749.3484 P	201	9 2 8	8 2 7	885.600	9.1 E-04	10
10751.1224 P	300	4 3 1	3 2 2	206.301	4.0 E-06	15
10751.3262 P	102	4 2 3	5 1 4	399.457	8.9 E-05	10
10751.7844	201	9 4 6	8 4 5	1122.709	2.19E-04	6
10752.0932	201	9 1 8	8 1 7	882.891	2.81E-04	6
10752.3233 P	300	5 3 2	5 0 5	325.347	2.3 E-05	10
10752.4251	201	7 2 5	6 2 4	602.773	6.72E-04	6
10752.6144 P	102	2 1 1	3 2 2	206.301	1.5 E-04	10
10753.0268 P	102	4 0 4	5 1 5	326.625	1.2 E-04	10
10753.2518 P	003	5 1 4	6 3 3	661.548	2.7 E-05	15
10753.8759	121	7 4 4	6 2 5	552.911	4.59E-05	6
10753.9887 P	003	7 5 2	8 5 3	1255.912	3.2 E-06	20
10754.4115 P	003	7 5 3	8 5 4	1255.166	6.39E-06	6
10754.6790 P	102	7 1 6	7 2 5	782.409	1.1 E-05	10
10755.0095 P	102	8 2 6	8 3 5	1050.157	5.9 E-06	20
10755.2511	201	9 3 7	8 3 6	1006.116	4.52E-04	6
10755.5252 B	201	11 1 11	10 1 10	1114.549	5.88E-04	6
10755.5252 B	201	11 0 11	10 0 10	1114.533	5.88E-04	6
10755.7506 P	003	8 3 5	9 3 6	1282.919	2.6 E-05	10
10755.9066 P	201	10 2 9	9 2 8	1080.385	1.09E-04	6
10756.1765	102	4 1 4	5 0 5	325.347	3.28E-04	6
10756.6602	300	5 3 3	4 2 2	315.779	1.5 E-05	15
10756.8885	102	9 2 7	8 5 4	1255.166	2.4 E-06	15
10757.3480	102	5 2 4	5 3 3	503.968	7.98E-06	6
10757.4712 P	102	8 0 8	7 3 5	816.694	7.5 E-06	15
10757.6886	201	10 1 9	9 1 8	1079.080	4.00E-04	6
10758.0271 P	102	6 4 2	7 3 5	816.694	2.9 E-06	20
10758.2303 P	022	7 3 5	6 2 4	602.773	7.0 E-05	10
10758.3645 P	003	5 3 3	5 5 0	742.076	1.6 E-06	50
10759.4588 P	102	8 5 1	7 4 4	927.744	2.8 E-06	20
10759.7767 P	201	8 2 6	7 2 5	782.409	4.32E-04	6
10759.9680 P	201	4 4 0	4 2 3	300.362	3.4 E-06	50
10760.9230	201	5 4 1	5 2 4	416.201	2.4 E-06	15
10761.1826 P	102	5 1 4	4 4 1	488.107	3.9 E-07	50
10761.4345 P	201	12 1 12	11 1 11	1327.119	4.1 E-05	20
10761.5032 P	201	12 0 12	11 0 11	1327.109	2.1 E-04	10
10761.9779 P	102	5 1 5	5 2 4	416.208	7.4 E-06	15
10762.4876 P	102	6 6 1	7 5 2	1059.835	6.9 E-06	20
10762.5708 P	201	11 2 10	10 2 9	1293.634	1.5 E-04	10
10762.9589 B	300	4 4 1	3 3 0	285.418	7.1 E-05	10
10763.2303 B	201	11 1 10	10 1 9	1293.019	5.1 E-05	20
10763.2303 B•	300	4 4 0	3 3 1	285.219	5.1 E-05	20
10763.6201	201	10 3 8	9 3 7	1216.232	6.7 E-05	15
10763.8422	003	9 2 8	10 2 9	1293.634	1.55E-05	6
10764.5006	300	6 4 2	6 1 5	542.905	2.8 E-06	15
10764.6914	003	9 1 8	10 1 9	1293.019	5.61E-06	6
10764.9970	300	6 3 4	5 2 3	446.510	1.47E-04	6
10765.4334 P	022	8 3 6	7 2 5	782.409	4.36E-04	6
10765.9948	300	10 3 8	9 2 7	1201.921	1.7 E-05	15
10766.2611 P	300	5 4 1	5 1 4	399.457	1.1 E-05	15
10766.4357 B	201	13 0 13	12 0 12	1557.844	9.9 E-05	10
10766.4357 B	201	13 1 13	12 1 12	1557.849	9.9 E-05	10
10768.7844	102	1 1 1	2 2 0	136.163	4.63E-05	6
10767.1072 B	003	10 1 10	11 1 11	1327.119	2.5 E-05	20
10767.1072 B	003	10 0 10	11 0 11	1327.109	2.5 E-05	20
10767.2059	201	8 3 5	7 3 4	842.356	7.94E-04	6
10767.5030 P	201	9 4 5	8 4 4	1131.776	6.5 E-05	10
10767.8618 P	201	12 2 11	11 2 10	1525.137	1.8 E-05	10
10767.9703	201	12 1 11	11 1 10	1524.849	5.13E-05	6
10768.0939 B	121	8 3 6	7 1 7	586.479	5.3 E-06	50
10768.2683 P	102	4 2 3	4 3 2	382.516	3.6 E-05	15
10769.0490	102	9 1 8	8 4 5	1122.709	6.81E-06	6
10769.6636 P	003	8 3 6	9 3 7	1216.232	7.8 E-06	20
10769.7941 P	300	7 3 5	6 2 4	602.773	8.3 E-05	10
10769.8880 P•	003	6 3 3	6 5 2	888.598	3.3 E-06	50
10770.3349 B	201	14 1 14	13 1 13	1808.673	2.5 E-05	10
10770.3349 B	201	14 0 14	13 0 13	1808.671	2.5 E-05	10
10770.5380	003	8 2 6	9 2 7	1201.921	2.48E-05	6
10770.7740 P	102	5 4 2	6 3 3	661.548	3.5 E-06	10
10770.8895	201	11 3 9	10 3 8	1446.128	5.23E-05	6
10771.8377	201	13 2 12	12 2 11	1774.751	1.72E-05	6
10772.1283	201	11 4 8	10 4 7	1581.336	2.97E-05	6
10772.4264	003	7 4 3	8 4 4	1131.776	7.37E-06	6
10772.7124	300	8 3 6	7 2 5	782.409	2.32E-04	6

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SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10772.8569 B	102	7 2 5	7 3 4	842.356	9.1 E-05	10
10772.8569 B	201	9 2 7	8 2 6	982.912	9.1 E-05	10
10773.2333	102	1 1 0	2 2 1	134.902	1.92E-04	6
10774.1837	102	3 0 3	4 1 4	224.838	3.35E-04	6
10774.3400	201	4 2 2	3 0 3	138.781	5.04E-04	6
10774.6420 P	121	5 5 0	4 3 1	383.842	3.3 E-06	50
10774.9800 B*	003	7 2 6	7 4 3	931.237	4.9 E-06	15
10775.3453 B	201	16 1 16	15 1 15	2358.304	3.4 E-06	15
10775.3453 B	201	16 0 16	15 0 15	2358.304	3.4 E-06	15
10775.6383 B	102	3 2 2	3 3 1	285.219	3.9 E-05	50
10775.6383 B	003	7 4 4	8 4 5	1122.709	3.9 E-05	50
10775.8581 P	022	4 4 1	3 3 0	285.418	6.0 E-05	10
10775.9849 P	121	5 5 1	4 3 2	382.516	2.3 E-06	50
10776.0800	022	4 4 0	3 3 1	285.219	1.53E-05	6
10776.5953 B	003	7 3 4	7 5 3	1059.647	6.61E-05	6
10776.5953 B	102	4 3 2	5 2 3	446.510	6.61E-05	6
10777.2879 P	201	12 2 10	11 2 9	1690.685	2.4 E-05	15
10777.9002	102	5 0 5	5 1 4	399.457	3.4 E-05	15
10778.0822 B	300	6 3 3	6 0 6	446.897	3.2 E-06	20
10778.1213 B*	102	8 1 7	7 4 4	927.744	1.1 E-06	50
10778.6382 P	201	10 2 8	9 2 7	1201.921	1.3 E-04	10
10779.5968	201	3 3 0	2 1 1	95.175	3.1 E-05	15
10780.3650 P	102	7 1 6	6 4 3	756.724	8.9 E-07	20
10780.8508	003	6 5 1	7 5 2	1059.835	1.51E-05	6
10780.8144	201	9 3 6	8 3 5	1050.157	1.08E-04	6
10781.0288	102	3 1 3	4 0 4	222.052	1.12E-04	6
10781.1618 P	102	4 1 4	4 2 3	300.362	4.76E-05	6
10781.4061	102	6 2 4	6 3 3	661.548	8.40E-06	6
10781.6386 P	300	5 4 2	4 3 1	383.842	7.9 E-07	20
10781.9283 P	102	3 2 1	3 3 0	285.418	4.3 E-05	20
10782.1089	102	6 1 5	6 2 4	602.773	9.91E-06	6
10782.8481	102	7 3 4	8 2 7	885.600	4.20E-06	6
10783.3976	102	5 4 1	6 3 4	648.978	8.61E-06	6
10783.5072 P	003	8 3 5	8 5 4	1255.186	9.9 E-07	20
10783.6550 P	102	4 2 2	4 3 1	383.842	1.5 E-05	15
10784.0136 P	300	8 4 4	8 1 7	882.891	1.0 E-06	20
10784.3468	003	3 1 3	4 3 2	382.516	5.19E-06	6
10784.4846	102	5 2 3	5 3 2	508.812	3.13E-05	6
10784.8257	102	8 3 5	9 2 8	1080.385	5.6 E-06	15
10785.0575	201	5 5 1	5 3 2	508.812	8.72E-06	6
10785.3508	102	3 2 2	4 1 3	275.497	2.68E-05	6
10785.6804 P	201	10 4 6	9 4 5	1360.235	7.24E-05	6
10786.0719	003	7 3 4	8 3 5	1050.157	1.5 E-05	15
10787.5551 B	003	10 3 7	10 5 6	1718.718	4.7 E-06	20
10787.5551 B	121	8 4 5	7 2 6	709.608	4.7 E-06	20
10787.9342	003	4 1 3	5 3 2	508.812	8.71E-06	6
10788.9515	201	10 3 7	9 3 6	1282.919	9.75E-05	6
10789.1570 P	102	5 5 1	6 4 2	757.780	2.0 E-06	15
10789.7835 B	201	5 5 0	5 3 3	503.988	4.3 E-06	15
10790.2024	102	5 5 0	6 4 3	756.724	5.1 E-06	15
10790.7398 P	003	11 2 10	11 2 9	1690.665	8.4 E-07	50
10791.9552 P	102	8 1 8	7 2 5	752.409	1.08E-05	6
10792.3384 P	121	6 5 1	5 3 2	508.812	2.2 E-06	20
10792.5425 P	003	8 1 7	9 1 8	1079.080	4.3 E-06	10
10792.8123 P	102	5 3 2	6 2 5	552.911	1.05E-05	6
10793.9422	102	2 0 2	3 1 3	142.278	1.23E-04	6
10793.9118	121	9 2 7	8 0 8	744.064	1.6 E-06	15
10794.3495 B	003	9 1 9	10 1 10	1114.549	4.8 E-05	50
10794.3751 B*	003	9 0 9	10 0 10	1114.533	2.7 E-05	50
10795.0203	201	3 3 1	2 1 2	79.495	5.14E-05	6
10795.2085 P	022	7 4 3	7 1 6	704.214	1.3 E-06	50
10795.4336 P*	300	5 5 1	4 4 0	488.134	1.1 E-05	50
10795.4683 P	300	5 5 0	4 4 1	488.107	2.5 E-05	50
10795.7512 P	201	4 3 1	3 1 2	173.365	2.2 E-04	10
10796.7789 B	102	3 1 3	3 2 2	208.301	2.5 E-05	50
10797.0675 P	003	6 1 6	6 3 3	661.548	2.2 E-06	20
10797.1566 P	003	8 2 7	9 2 8	1080.385	9.3 E-06	10
10797.2489 P	003	7 3 5	8 3 6	1005.116	4.9 E-05	20
10797.2887 P	300	6 4 3	5 3 2	508.812	1.9 E-05	50
10797.9811	003	4 0 4	5 2 3	446.510	7.8 E-06	15
10798.3735 B	022	5 4 2	4 3 1	383.842	8.64E-06	6
10798.3735 B	003	6 2 5	6 4 2	757.780	8.64E-06	6
10799.5615	003	7 2 5	8 2 6	982.912	2.05E-05	6
10799.8995	022	5 4 1	4 3 2	382.516	1.67E-05	6
10800.5844	003	10 0 10	10 2 9	1293.834	1.8 E-06	15
10801.1980 P	003	10 1 10	10 1 9	1293.019	5.9 E-07	20
10801.8252	003	6 4 2	7 4 3	931.237	4.78E-05	6
10802.7778	102	5 1 4	5 2 3	446.510	7.70E-05	6
10803.4066 B	003	6 4 3	7 4 4	927.744	1.7 E-05	50
10804.1578	102	4 0 4	4 1 3	275.497	2.81E-05	6
10805.0413 B	003	5 5 0	6 5 1	888.632	2.6 E-05	50
10805.0413 B	003	5 5 1	6 5 2	888.598	2.6 E-05	50
10806.1817 P	102	4 4 1	5 3 2	508.812	6.92E-06	6
10806.5624	102	2 1 2	3 0 3	136.761	2.85E-04	6
10807.9373 P	201	7 6 2	7 4 3	931.237	3.9 E-07	50
10808.4227	102	2 1 2	2 2 1	134.902	7.04E-05	6
10811.0227	102	4 4 0	5 3 3	503.988	2.7 E-06	15
10812.1798	102	1 0 1	2 1 2	79.495	2.86E-04	6
10812.8213	300	7 3 4	7 0 7	588.243	2.9 E-06	15
10813.4886 P	300	8 4 5	7 3 4	842.356	2.0 E-05	15
10813.8497	201	5 3 2	4 1 3	275.497	1.21E-04	6
10813.9386 P	102	3 3 1	4 2 2	315.779	5.8 E-08	20
10814.3245 P	201	5 2 3	4 0 4	222.052	9.1 E-05	10
10814.5838 P	003	3 1 2	4 3 1	383.842	4.0 E-06	15
10814.8577 P	003	5 2 4	5 4 1	610.340	4.1 E-06	15
10814.7933 P	121	6 4 2	5 0 5	325.347	1.9 E-06	20
10814.8472 P	003	10 1 9	10 3 8	1446.128	1.7 E-06	20
10815.7439	102	4 1 3	4 2 2	315.779	4.43E-05	6
10816.0403 P	121	9 3 7	8 1 8	744.163	3.5 E-06	10
10816.1385 P	003	6 3 3	7 3 4	842.356	9.7 E-05	10
10816.9344	121	8 5 3	7 3 4	842.356	1.98E-05	6
10818.4339 P	201	6 6 0	6 4 3	756.724	3.4 E-07	50
10818.9993 P	121	7 5 3	6 3 4	648.978	2.9 E-06	10
10819.0887 P	102	2 2 1	3 1 2	173.365	4.35E-05	6
10819.2114 P	300	4 3 2	3 0 3	136.761	9.1 E-06	15
10819.6890	003	7 1 6	8 1 7	882.891	3.36E-05	6
10820.6254 P	003	7 2 6	8 2 7	885.600	9.0 E-05	20
10820.7937 P	003	8 1 8	9 1 9	920.211	3.3 E-05	50
10820.8403 P	003	8 0 8	9 0 9	920.169	8.9 E-05	20
10821.3620 P	003	2 1 2	3 3 1	285.219	1.8 E-06	15
10821.7826	102	3 1 2	3 2 1	212.156	1.64E-04	6
10822.7554	102	2 1 1	2 2 0	136.163	3.87E-05	6
10823.5906 B	300	6 6 0	5 5 1	742.073	5.8 E-06	20
10823.5906 B	300	6 6 1	5 5 0	742.076	5.8 E-06	20
10824.3039	022	6 4 2	5 3 3	503.968	2.7 E-06	15
10824.5180	003	6 3 4	7 3 5	816.694	3.41E-05	6
10824.7014	121	9 4 6	8 2 7	885.600	4.24E-06	6
10825.0782 P	300	7 4 3	6 3 4	648.978	1.7 E-05	10
10825.1598 P	201	4 3 2	3 1 3	142.278	2.8 E-05	10
10825.3294 P	003	4 2 3	4 4 0	488.134	1.4 E-06	50
10825.6562	102	3 0 3	3 1 2	173.365	1.52E-04	6
10826.4155 P	300	8 7 2	7 6 1	1216.193	3.9 E-07	50
10828.0450 B	003	6 2 4	7 2 5	782.409	1.7 E-04	10
10828.5243	003	9 0 9	9 2 8	1080.385	1.7 E-06	15
10829.6181	102	3 3 0	4 2 3	300.362	1.4 E-05	15
10829.8127 P	003	9 1 9	9 1 8	1079.080	5.45E-06	6
10829.9378 P	300	7 5 3	6 4 2	757.780	2.1 E-06	20
10830.0560	003	5 4 1	6 4 2	757.780	2.53E-05	6
10830.6775	003	5 4 2	6 4 3	756.724	7.57E-05	6
10831.4286	300	7 5 2	6 4 3	756.724	5.3 E-06	15
10831.7388	102	0 0 0	1 1 1	37.136	6.50E-05	6
10832.8373	102	1 1 1	2 0 2	70.090	5.03E-05	6
10834.3487	003	5 1 5	5 3 2	508.812	4.9 E-06	15
10837.1251	201	6 3 3	5 1 4	399.457	3.0 E-04	10
10838.8612 P	300	5 4 2	5 1 5	326.625	3.9 E-07	50
10840.6441 P	102	2 0 2	2 1 1	95.175	8.3 E-05	10
10840.8718 P	102	4 2 2	5 1 5	326.625	2.8 E-06	15
10841.4796	003	9 1 8	9 3 7	1216.232	1.5 E-06	15
10842.5069	102	3 2 1	4 1 4	224.838	1.4 E-05	15
10843.4513	003	4 2 2	4 4 1	488.107	2.52E-06	6
10843.5911	300	8 5 4	7 4 3	931.237	7.88E-06	6
10845.9583 P	300	7 3 4	6 2 5	552.911	4.4 E-06	20
10846.0272 P	003	5 3 2	6 3 3	661.548	6.2 E-05	20
10846.0963 P	003	6 1 5	7 1 6	704.214	1.9 E-04	10
10846.2941 P	003	7 1 7	8 . 8	744.163	1.8 E-04	10
10846.5328 B	003	6 2 5	7 2 6	709.608	1.2 E-04	20
10846.5328 B	003	7 0 7	8 0 8	744.064	1.2 E-04	20
10847.6968	003	3 0 3	4 2 2	315.779	5.6 E-06	15
10848.1760	201	4 4 0	3 2 1	212.156	2.91E-05	6
10849.3044	102	1 0 1	1 1 0	42.371	2.46E-04	6
10849.7487	003	8 2 6	8 4 5	1122.709	4.7 E-06	15
10850.2087	300	8 4 4	7 3 5	816.694	3.9 E-06	15
10850.3892 P	300	5 3 3	4 0 4	222.052	2.7 E-06	20
10850.4441 P	022	7 4 3	6 3 4	648.978	3.7 E-06	20
10850.5771 P	102	5 3 3	4 4 0	488.134	3.4 E-05	50
10851.4693	003	5 3 3	6 3 4	648.978	1.73E-04	6
10851.6022 P	102	2 2 0	3 1 3	142.278	4.66E-06	5
10853.7262	003	6 2 4	6 4 3	756.724	6.00E-06	6
10854.7282 P	003	7 2 5	7 4 4	927.744	2.2 E-06	15
10854.8082 B	121	7 7 1	7 5 2	1059.835	3.4 E-07	50
10855.4081	003	8 0 8	8 2 7	885.600	1.1 E-05	15
10855.5561 B	003	9 2 8	9 2 7	1201.921	6.5 E-06	15
10855.5561 B	300	8 6 3	7 5 2	1059.835	6.5 E-06	15
10856.4389 P	003	5 2 3	6 2 4	602.773	9.1 E-05	10
10857.2749	003	4 4 0	5 4 1	610.340	8.34E-05	6
10857.4487	003	4 4 1	5 4 2	610.113	2.78E-05	6
10858.1119	003	8 1 8	8 1 7	882.891	3.6 E-06	15
10858.5215 P	201	5 3 3	4 1 4	224.838	8.34E-05	6
10859.9824	201	6 2 4	5 0 5	325.347	1.33E-04	6
10861.3528	201	5 4 1	4 2 2	315.779	1.92E-05	6
10862.0527 P	003	4 1 4	4 3 1	383.842	2.1 E-06	20
10862.4086	102	5 1 5	4 2 2	315.779	2.3 E-06	15
10865.3582 B	102	4 2 3	3 3 0	285.418	2.6 E-06	20
10865.5050	003	8 1 7	8 3 6	1006.116	1.0 E-05	15
10865.9636	300	9 5 4	8 4 5	1122.709	5.5 E-06	15
10866.9170	102	3 1 3	2 2 0	138.183	1.7 E-06	15
10867.3728	121	9 5 5	8 3 6	1006.116	2.1 E-06	15
10867.6616	201	7 3 4	6 1 5	542.905	5.21E-05	6
10868.3505	102	6 3 4	5 4 1	610.340	2.7 E-06	15
10869.3683	102	4 1 4	3 2 1	212.156	2.7 E-06	15
10869.7468 P	102	6 4 3	7 1 6	704.214	3.9 E-06	15
10871.0849 P	102	7 2 5	8 1 8	744.163	3.3 E-06	20
10871.3140	003	8 0 8	7 0 7	588.243	3.42E-04	6
10871.8885	003	5 1 4	6 1 5	542.905	1.29E-04	6
10872.0382 P	201	6 4 2	5 2 3	446.510	1.1 E-04	50
10872.0871 P	003	5 2 4	6 2 5	552.911	3.5 E-04	20
10872.1349 P	003	6 1 6	7 1 7	588.479	1.4 E-04	50
10875.0187 P	300	4 4 1	3 1 2	173.365	1.4 E-06	15
10875.3735	003	4 3 1	5 3 2	508.812	2.53E-04	6
10878.9187	201	5 4 2	4 2 3	300.362	4.53E-05	6

Table 2 Can. J. Phys. Cheveillard et al. page 10

CM-1								INTENSITY CM-2 ATM-1	%	SIGMA CM-1								INTENSITY CM-2 ATM-1	%
10877.4702	P	102	5	2	4	4	3	1	383.842	5.4 E-07	50	10925.0373	B	201	6	5	1	5	3	2	508.812	3.5 E-05	50
10878.1643	P	003	4	3	2	5	3	3	503.968	8.2 E-05	10	10925.2217	P	102	4	1	3	3	2	2	206.301	1 4 E-05	10
10880.4820		300	9	4	5	8	3	6	1006.116	4 5 E-06	15	10925.7829	P	102	6	3	4	6	2	5	552.911	4 2 E-05	10
10880.9838	P	003	7	0	7	7	2	6	709.608	7.8 E-06	20	10925.9458	P	102	4	2	3	4	1	4	224.838	1 8 E-04	10
10881.0671	P	102	10	3	8	9	4	5	1360.235	1.5 E-06	20	10927.3335	P	102	7	6	2	7	5	3	1059.647	1 61E-05	6
10881.4442		003	3	1	3	3	3	0	285.418	4 5 E-06	15	10927.4131	P	003	5	0	5	5	2	4	416.208	1 7 E-06	50
10881.6790	B	003	7	7	1	7	7	0	1394.813	1.65E-05	6	10927.5910		201	7	4	4	6	2	5	552.911	5.77E-05	6
10881.6790	B	003	7	7	0	7	7	1	1394.813	1.65E-05	6	10928.3548		102	5	4	2	5	3	3	503.968	1 97E-05	6
10882.2990		102	8	3	5	8	2	6	982.912	9.38E-06	6	10929.4212		102	6	5	1	6	4	2	757.780	1 3 E-05	15
10882.5732	P	201	7	4	3	6	2	4	602.773	2.70E-05	6	10929.5374	P	300	9	3	6	8	2	7	885.600	1.7 E-06	15
10882.6789	B	102	6	2	5	5	3	2	508.812	5.7 E-06	20	10929.8014	B•	201	6	5	2	5	3	3	503.968	1 4 E-05	50
10882.6789	B	121	6	6	0	5	4	1	610.340	5.7 E-06	20	10929.8014	B	102	7	3	5	7	2	6	709.608	1 4 E-05	50
10882.7658	P	121	6	6	1	5	4	2	610 113	2.0 E-06	20	10930.5529		102	6	5	2	6	4	3	756.724	3 53E-05	6
10884.3400		102	1	1	0	1	0	1	23.794	3.19E-04	6	10931.1476		102	4	4	0	4	3	1	383.842	2 7 E-05	15
10885.0489		003	4	2	2	5	2	3	446.510	4.74E-04	6	10932.4781	P	102	4	4	1	4	3	2	382.516	7 0 E-05	10
10885.8656		003	7	1	6	7	3	5	818.694	7.55E-06	6	10932.9899	B•	102	9	2	7	9	1	8	1079.080	9.15E-05	6
10886.0388		102	7	3	4	7	2	5	782.409	4 95E-05	6	10932.9899	B	102	3	1	3	2	0	2	70.090	9 15E-05	6
10886.1593	P	300	6	3	4	5	0	5	325.347	4 6 E-06	10	10933.6683	P	102	6	6	0	6	5	1	888.632	1 4 E-05	20
10886.2425	P	003	7	1	7	7	1	6	704.214	2.7 E-05	10	10933.7214	P	102	6	6	1	6	5	2	888.598	4 0 E-05	20
10887.8172		003	2	0	2	3	2	1	212.156	2.71E-05	6	10933.9810		201	7	3	5	6	1	6	447.252	3 4 E-05	15
10888.8281	P	102	2	1	1	2	0	2	70.090	2.0 E-04	20	10934.6901		102	5	2	4	5	1	5	326.625	3 72E-05	6
10889.4152	P	102	5	4	2	6	1	5	542.905	1.0 E-06	20	10934.8172		102	8	3	6	8	2	7	885.600	1 73E-05	6
10889.5206	B	300	8	3	5	7	2	6	709.608	5.4 E-07	50	10935.7385	P	003	8	3	6	8	3	5	1050.157	1 9 E-06	15
10889.9883	P	300	5	4	2	4	1	3	275.497	6.9 E-07	20	10936.1593		201	7	5	2	6	3	3	661.548	6 1 E-06	15
10890.1093	P	121	6	6	1	6	2	4	602.773	4.6 E-06	15	10936.5858		102	5	5	0	5	4	1	610.340	4 10E-05	6
10891.0787		102	6	3	3	6	2	4	602.773	2.48E-05	6	10936.8226	B	102	5	5	1	5	4	2	610.113	1 44E-05	6
10892.0062	P	102	4	2	2	4	1	3	275.497	1.2 E-04	10	10936.8226	B	102	7	6	2	8	3	5	1050.157	1 44E-05	6
10892.4497		102	6	3	4	7	0	7	586.243	3.2 E-06	15	10937.3758		102	4	0	4	3	1	3	142.278	6 6 E-05	15
10893.8398		102	5	2	3	5	1	4	399.457	1.63E-04	6	10938.1865		102	6	1	5	6	0	6	446.697	2 41E-05	6
10893.9810		102	3	2	1	3	1	2	173.365	3.06E-04	6	10938.9847		102	6	2	4	5	3	3	503.968	2.1 E-06	15
10894.4129	P	201	5	5	1	5	1	4	399.457	3.7 E-05	10	10939.6469		003	9	5	5	9	5	4	1477.297	1 5 E-06	15
10894.9724		201	6	3	4	5	1	5	326 625	2 0 E-05	10	10939.8378		003	9	4	6	9	4	5	1360 235	2 0 E-06	15
10895.9089		003	5	1	5	6	1	6	447.252	5.65E-04	6	10941.4236		003	3	0	3	4	0	4	222.052	3.85E-04	6
10896.3670	P	201	8	4	4	7	2	5	782.409	6 3 E-05	10	10942.0201	B	003	3	1	3	4	1	4	224.838	1 2 E-03	20
10896.5681	P	300	7	2	5	6	1	6	447.252	2.0 E-06	20	10942.7125		003	2	2	0	3	2	1	212.156	5 54E-04	6
10896.9285		003	5	0	5	6	0	6	446.697	1 43E-04	6	10943.3537		201	8	5	3	7	3	4	842.356	1 49E-05	6
10897.1755	P	102	3	1	2	3	0	3	136.761	3.5 E-04	10	10943.7040		003	5	1	5	5	1	4	399.457	5 86E-05	6
10897.2878	B	003	4	1	3	5	1	4	399.457	6.6 E-04	20	10943.9947	P	201	10	4	6	9	2	7	1201.921	1 3 E-05	20
10897.7390	P	102	4	3	2	5	0	5	325.347	7 3 E-06	15	10944.1098	P	003	4	0	4	4	2	3	300.362	7 22E-05	6
10898.6999	B	102	2	2	0	2	1	1	95.175	1 1 E-04	20	10944.2251	P	102	6	2	5	6	1	6	447.252	7 10E-05	6
10899.0372	P	102	3	1	2	2	2	1	134.902	2.2 E-05	15	10944.7627		102	1	1	1	3	0	3	136.761	2 24E-04	6
10899.2127		102	5	3	2	5	2	3	446.510	1.34E-04	6	10945.8798		003	8	5	4	8	5	3	1255.912	1 8 E-06	15
10900.0480		102	6	2	4	6	1	5	542.905	3 83E-05	6	10946.0297	P	003	6	2	5	5	4	2	610 113	4 0 E-07	50
10900.3208		102	7	4	3	7	3	4	842.356	2.93E-05	6	10946.9696		003	2	2	1	3	2	2	206.301	1 75E-04	6
10900.8294		201	6	4	3	5	2	4	416.208	1.7 E-05	15	10947.4909	P	300	8	2	6	7	1	7	586.479	6 5 E-07	50
10901.3316		003	6	1	5	6	3	4	648.978	3 73E-05	6	10947.6731	P	102	10	3	8	10	2	9	1293.634	3 4 E-06	15
10902.8461	P	003	8	6	2	8	6	3	1411.612	1 7 E-05	10	10948.0816		201	9	3	6	8	1	7	882.891	7 5 E-06	15
10902.9278	P	102	1	1	1	0	0	0	0 000	7 4 E-05	10	10948.3240	P•	201	9	5	4	8	3	5	1050.157	5.7 E-06	50
10903.5953		003	3	3	0	4	3	1	383.842	8 6 E-05	15	10948.3643	P	201	7	5	3	6	3	4	648.978	1 6 E-05	20
10904.6031	B	003	3	3	1	4	3	2	382.516	2.4 E-04	20	10948.9262	P	102	5	1	4	4	2	3	300.362	4 8 E-05	10
10905.3486		201	8	3	5	7	1	6	704.214	6.3 E-05	10	10949.2015		003	2	1	1	3	1	2	173.365	1 04E-03	6
10905.6112		121	7	6	2	6	4	3	756.724	5 2 E-06	20	10949.4900	P	003	7	2	6	6	4	3	756.724	3 1 E-06	50
10906.6478	P	300	6	4	3	5	1	4	399.457	1 3 E-06	15	10949.7446	B	003	7	5	3	7	5	2	1059.835	1 9 E-05	20
10907.6661	B	102	3	3	1	4	0	4	222.052	5 5 E-07	50	10950.0827		102	2	2	1	1	1	0	42.371	2 82E-04	6
10908.5024	P	201	7	2	5	6	0	6	446.697	1 53E-05	6	10950.2524	P	003	7	5	2	7	5	3	1059.647	7 0 E-06	10
10909.0503		102	4	3	1	4	2	2	315.779	5 36E-05	6	10950.8458		102	7	1	6	7	0	7	586.243	4 12E-05	6
10909.2808	P	300	8	6	3	8	3	6	1006 116	2.0 E-06	15	10951.5679	B	003	5	5	0	5	5	1	742.073	2 94E-04	6
10909.4706		102	4	1	3	4	0	4	222 052	6 94E-05	6	10951.5679	B	003	5	5	1	5	5	0	742 076	2 94E-04	6
10909.9136		201	5	5	0	4	3	1	383 842	3 1 E-06	15	10951.7903	P	003	6	5	2	6	5	1	888.632	1 8 E-05	10
10910.8265	P	003	5	1	4	5	3	3	503.968	1 36E-05	6	10951.8873	P	003	6	5	1	6	5	2	888.598	5 4 E-05	10
10910.9414	B	003	7	6	2	7	6	1	1216 193	2 7 E-05	10	10952 5197		102	5	0	5	4	1	4	224 838	1 56E-04	6
10910.9414	B	003	7	6	1	7	6	2	1216 189	2 7 E-05	10	10953 3714	P	003	6	2	5	6	2	4	602 773	1 3 E-05	15
10911 0126	P	102	7	2	5	7	1	6	704 214	3 7 E-05	10	10953 9677	P	102	7	2	6	7	1	7	586 479	1 8 E-05	15
10911 3532		201	5	5	1	4	3	2	382 516	1 21E-05	6	10954 6461		003	6	1	6	5	3	3	503.968	1 2 E-06	15
10912.9579		102	2	2	1	2	1	2	79 495	1 62E-04	6	10955 0805	B	121	8	5	3	7	1	6	704 214	2 4 E-06	15
10913 1731	B	102	6	4	2	6	3	3	661 548	1 8 E-05	20	10955 0805	B	201	5	4	1	4	0	4	222.052	2 4 E-06	15
10913 9250	P	003	3	2	1	4	2	2	315 779	2 0 E-04	10	10955 9130		201	8	2	6	7	0	7	586.243	1 63E-05	6
10914 2285	P	003	4	1	3	4	3	2	382 516	3 0 E-05	10	10956 1356		102	5	1	5	4	0	4	222.052	5 24E-05	6
10914 7669	B	003	7	3	5	6	5	2	888.598	2.0 E-07	50	10956 5040	P	003	8	4	5	8	4	4	1131.776	3 1 E-06	15
10915 4608	P	102	8	5	4	8	4	5	1122 709	5 1 E-06	15	10956 7434	P	102	2	2	0	1	1	1	37 136	7 5 E-05	10
10915 7102	P	003	6	1	6	6	1	5	542.905	6 2 E-06	15	10957.0519		201	8	4	5	7	2	6	709.608	7 38E-06	6
10916 3869		201	9	4	5	8	2	6	982.912	1 08E-05	6	10957 1776		003	3	0	3	3	2	2	206.301	5 74E-05	6
10916 6901	B	300	6	6	1	6	3	4	648.978	1 5 E-06	50	10957.3197	P	201	10	3	7	10	1	10	1114.549	6 0 E-07	50
10916 7209	B•	121	8	4	4	7	0	7	586.243	1.2 E-06	50	10958 5974	P	003	8	0	8	7	2	5	782.409	3 5 E-07	50
10917 8243	P	102	3	3	0	3	2	1	212.156	1 3 E-04	10	10960 6457		003	5	1	5	4	3	2	382.516	1 8 E-06	15
10918 5690		102	3	2	2	3	1	3	142.278	6 39E-05	6	10961 0074		003	7	3	5	7	3	4	842.356	2 24E-05	6
10918 8000	B	003	6	6	0	6	6	1	1045 057	8 0 E-05	10	10961 5997		022	8	3	6	7	0	7	586.243	3 3 E-06	15
10918 8000	B	003	6	6	1	6	6	0	1045 058	8 0 E-05	10	10961 8001		102	8	1	7	8	0	8	744.064	7 7 E-06	15
10919 1241		003	4	0	4	5	0	5	325 347	8.57E-04	6	10963 2118	P	003	2	0	2	3	0	3	136.761	1 4 E-03	20
10919 2705		003	4	1	4	5	1	5	326.625	2 62E-04	6	10963.5368	P	102	8	2	7	8	1	8	744.183	2 3 E-05	10
10919 5280	B	102	3	0	3	2	1	2	79 495	4 7 E-04	20	10964 3049	P	003	2	1	2	3	1	3	142.278	3 9 E-04	10
10919 5280	B	102	2	1	2	1	0	1	23 794	4 7 E-04	20	10964 8147	P	201	6	6	0	5	4	1	610.340	2 5 E-06	15
10919 9053	P	300	8	7	2	8	4	5	1122.709	4 3 E-06	15	10965.0721		003	2	0	2	2	2	1	134.902	4 83E-05	6
10920.9254	B	102	7	5	2	7	4	3	931.237	1 5 E-05	20	10965.4798	P	102	6	0	6	5	1	5	326.625	3 3 E-05	10
10922 1771		003	3	2	2	4	2	3	300.362	6 25E-04	6	10965.6718		102	3	2	2	2	1	1	95.175	7 10E-05	6
10922 2745	P	102	8	2	6	8	1	7	882.891	9 6 E-06	50	10966.2477		102	7	2	5	6	3	4	648.978	6 8 E-06	15
10922.5068	B	102	5	3	3	5	2	4	416.208	5.32E-05	6	10967.1502	B	102	6	1	6	5	0	5	325.347	1 0 E-04	50
10922.7256		102	4	3	2	4	2	3	300.362	1 45E-04	6	10967.7303		201	8	5	4	7	3	5	818.694	4 0 E-06	15
10922.9307		003	3	1	2	4	1	3	275.497	2.97E-04	6	10968.8735		102	6	1	5	5	2	4	416.208	1 3 E-05	15
10923.4170	P	102	3	3	1	3	2	2	206.301	4.20E-05	6	10968.8779		300	8	3	6	7	0	7	586.243	2 1 E-06	15
10923.5833		102	5	4	1	5	3	2	508.812	7 43E-05	6	10970.3994		003	4	1	4	4	1	3	275.497	3 97E-05	6
10923.8185	P	003	7	2	6	7	2	5	782.409	1 15E-05	6	10971.5856		102	9	1	8	9	0	9	920.169	1 0 E-05	15
10923.9399		102	5	1	4	5	0	5	325.347	1 40E-04	6	10973.3721		003	6	4	3	6	4	2	757.780	3 49E-05	6
10924.5742		102	7	5	3	7	4	4	927 744	4 9 E-06	15	10973.5038	P	201	7	7	1	6	5	2	888.598	1 5 E-06	20
10924.9802	P	102	6	4	3	6	3	4	648.978	3 9 E-05	20	10974.8608		201	8	3	6	7	1	7	586.479	4 4 E-06	15

Table 2 Can. J. Phys. Chevillard et al. page 11

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
10975.9370 P	003	1 1 0	2 1 1	95.175	2.66E-04	6
10976.3373	003	6 4 2	6 4 3	756.724	8.38E-05	6
10976.4585 P	003	7 4 3	7 4 4	927.744	1.0 E-05	20
10977.0634 P	003	5 4 2	5 4 1	610.340	3.24E-04	6
10977.4184 B	300	6 5 2	5 2 3	446.510	1.71E-04	6
10977.4184 B	102	4 2 3	3 1 2	173.365	1.71E-04	6
10977.7213 P	003	5 4 1	5 4 2	610.113	7.42E-05	6
10977.8349 P	102	7 1 7	6 0 6	446.697	1.85E-05	6
10978.4879 P	003	5 2 4	5 2 3	446.510	1.1 E-04	10
10978.8394 P	003	8 3 5	7 5 2	1059.835	8.5 E-07	15
10979.4284 P	003	4 4 1	4 4 0	488.134	2.3 E-04	10
10979.5080 P	003	4 4 0	4 4 1	488.107	6.0 E-04	10
10979.6627 P	003	6 3 4	6 3 3	661.548	2.4 E-05	10
10980.0223	003	8 4 4	8 4 5	1122.709	7.67E-06	6
10980.7779	300	6 4 2	5 1 5	326.625	7.0 E-07	15
10981.3988 B	201	7 6 1	6 4 2	757.780	1.0 E-06	50
10982.4486	201	7 6 2	6 4 3	756.724	2.9 E-06	15
10983.2098 P	300	5 5 0	4 2 3	300.362	3.0 E-07	50
10984.1785	102	7 1 6	6 2 5	552.911	2.72E-05	6
10984.7232 B•	003	4 3 1	5 1 4	399.457	2.4 E-06	50
10985.3811	003	1 0 1	2 0 2	70.090	4.14E-04	6
10985.8189	102	5 2 4	4 1 3	275.497	3.33E-05	6
10986.2785	003	1 1 1	2 1 2	79.495	8.88E-04	6
10987.6863 B	102	8 0 8	7 1 7	586.479	1.3 E-05	50
10987.8500 P	102	3 2 1	2 1 2	79.495	1.23E-04	6
10988.1205 P	102	8 1 8	7 0 7	586.243	3.2 E-05	15
10988.4709 P	102	8 2 6	7 3 5	816.694	1.9 E-06	15
10988.5620 P	201	9 5 5	8 3 6	1006.116	6.9 E-06	15
10988.8933	201	9 4 6	8 2 7	885.600	9.61E-06	6
10991.6356	003	5 3 3	5 3 2	508.812	1.99E-04	6
10992.0197	102	6 2 5	5 1 4	399.457	5.85E-05	6
10992.5275	201	8 7 1	7 5 2	1059.835	1.7 E-06	15
10992.7916	201	10 3 7	9 1 8	1079.080	7.10E-06	6
10993.2132 B	102	3 3 0	3 0 3	136.761	4.1 E-06	50
10993.4981 P	003	3 1 3	3 1 2	173.365	2.2 E-04	20
10993.5540 P	102	3 3 1	2 2 0	136.163	9.7 E-05	50
10994.8888	300	9 2 7	8 1 8	744.163	8.86E-06	6
10995.0787	102	3 3 0	2 2 1	134.902	2.95E-04	6
10995.2470 P	201	8 6 2	7 4 3	931.237	3.6 E-06	10
10996.2564	102	8 1 7	7 2 6	709.608	5.1 E-06	15
10997.5381	102	7 2 6	6 1 5	542.905	1.08E-05	6
10997.6836	003	4 2 3	4 2 2	315.779	9.14E-05	6
10997.9375 P	003	10 4 6	10 4 7	1581.336	1.0 E-06	50
10998.2898	003	4 3 2	4 3 1	383.842	1.61E-04	6
10999.4526	102	9 0 9	8 1 8	744.163	1.6 E-06	15
10999.6328	102	9 1 9	8 0 8	744.064	6.0 E-07	20
11000.1088	003	6 2 4	5 4 1	610.340	1.9 E-06	15
11001.6992 B	003	3 3 1	3 3 0	285.418	1.2 E-03	50
11002.2187	003	3 3 0	3 3 1	285.219	3.63E-04	6
11002.7777	102	4 3 1	4 0 4	222.052	2.1 E-06	15
11003.4848 P	102	8 2 7	7 1 6	704.214	1.41E-05	6
11003.6074 P	003	5 3 2	5 3 3	503.968	6.26E-05	6
11005.8341	201	9 6 3	8 4 4	1131.776	8.0 E-07	15
11005.9399	102	9 2 7	8 3 6	1006.116	3.3 E-06	15
11006.1537	102	9 1 8	8 2 7	885.600	8.3 E-06	15
11007.5527 P	003	9 1 8	8 3 5	1050.157	4.0 E-07	50
11007.6534 P	003	3 2 1	4 0 4	222.052	3.5 E-07	50
11008.6113	003	0 0 0	1 0 1	23.794	7.85E-04	6
11009.5168	003	6 3 3	6 3 4	648.978	6.67E-05	6
11010.3831	003	3 2 2	3 2 1	212.156	6.41E-04	6
11010.9312	102	4 3 2	3 2 1	212.156	1.79E-04	6
11011.3272 P	003	4 1 3	3 3 0	285.418	4.0 E-06	50
11011.4078 P	003	2 1 2	2 1 1	95.175	1.5 E-04	10
11011.7019 P	201	9 2 7	8 0 8	744.064	2.2 E-06	15
11014.7758	201	9 6 4	8 4 5	1122.709	2.2 E-06	15
11017.1076	003	2 2 1	2 2 0	136.163	4.94E-04	6
11017.2052 P	201	9 3 7	8 1 8	744.163	1.3 E-05	20
11018.1056	003	2 2 0	3 0 3	136.761	1.7 E-06	15
11018.5285	102	4 3 1	3 2 2	208.301	5.29E-05	6
11019.5352 P	003	7 3 4	7 3 5	816.694	8.6 E-06	20
11019.9669	003	2 2 0	2 2 1	134.902	1.44E-03	6
11020.3761 P	102	5 3 2	5 0 5	325.347	4.7 E-06	10
11021.3293	003	7 7 1	8 5 4	1255.166	1.6 E-06	15
11022.9334	102	5 3 3	4 2 2	315.779	1.93E-05	6
11023.4030 B	003	3 2 1	3 2 2	208.301	1.29E-03	6
11023.4030 B	003	1 1 1	1 1 0	42.371	1.29E-03	6
11024.6904 P	003	7 2 5	6 4 2	757.780	1.0 E-06	50
11025.2203	102	4 2 2	3 1 3	142.278	1.76E-05	6
11026.8004 P	300	7 4 3	6 1 6	447.252	6.0 E-07	50
11027.3124	003	3 0 3	2 2 0	136.163	6.2 E-06	15
11027.8456	003	5 0 5	4 2 2	315.779	2.0 E-05	15
11029.2648	003	8 1 7	7 3 4	842.356	1.9 E-06	15
11029.5763	102	4 4 1	3 3 0	285.418	2.16E-04	6
11029.7712	102	4 4 0	3 3 1	285.219	6.59E-05	6
11030.9528 P	003	5 1 4	4 3 1	383.842	2.9 E-06	20
11031.1969	003	4 2 2	4 2 3	300.362	2.67E-04	6
11031.8140 B•	102	6 4 2	6 1 5	542.905	1.1 E-06	50
11032.1840 P	102	6 3 4	5 2 3	446.510	3.8 E-06	10
11032.3165	003	4 0 4	3 2 1	212.156	2.90E-05	6
11032.5579	003	8 3 5	8 3 6	1006.116	7.0 E-06	15
11032.9168	102	5 4 1	5 1 4	399.457	1.7 E-06	15
11033.9753	003	1 1 0	1 1 1	37.138	3.50E-04	6
11036.8426	102	7 3 5	6 2 4	602.773	7.55E-06	6
11038.0071	102	8 3 6	7 2 5	782.409	9.55E-06	6
11038.4636	102	7 4 3	7 1 6	704.214	1.7 E-06	15

SIGMA CM-1	VIB	J'KA'KC'	J"KA"KC"	E" CM-1	INTENSITY CM-2 ATM-1	%
11039.3869	102	10 3 8	9 2 7	1201.921	1.4 E-06	15
11041.0112	003	7 1 6	6 3 3	661.548	1.5 E-06	15
11041.2194	003	8 2 6	7 4 3	931.237	2.1 E-06	15
11043.0046 P	003	5 2 3	5 2 4	416.208	4.1 E-05	50
11043.0710 P	003	2 1 1	2 1 2	79.495	4.7 E-04	10
11045.3612	102	5 3 2	4 2 3	300.362	7.16E-05	6
11046.7703	003	9 3 6	9 3 7	1216.232	8.1 E-07	15
11048.4794 P	102	5 4 2	4 3 1	383.842	3.9 E-05	20
11049.8586 P	102	5 4 1	4 3 2	382.516	9.9 E-05	10
11055.4714	003	1 0 1	0 0 0	0.000	2.80E-04	6
11058.1490	003	3 1 2	3 1 3	142.278	7.80E-05	6
11058.8556	300	6 6 1	5 3 2	508.812	2.5 E-06	15
11057.5407	003	6 2 4	6 2 5	552.911	4.33E-05	6
11058.8158 B	102	5 5 0	4 4 1	488.107	1.1 E-04	50
11058.8158 B	102	5 5 1	4 4 0	488.134	1.1 E-04	50
11059.6397 B	102	3 3 1	2 0 2	70.090	1.6 E-06	50
11059.6397 B	201	10 3 8	9 1 9	920.211	1.6 E-06	50
11059.8305	201	11 4 8	10 2 9	1293.634	2.2 E-06	15
11060.1505 P	003	10 3 7	10 3 8	1446.128	7.1 E-07	50
11060.3902	201	10 2 8	9 0 9	920.169	2.5 E-06	15
11065.1466	102	6 4 3	5 3 2	508.812	5.34E-05	6
11068.4585 P	102	5 2 3	4 1 4	224.838	1.1 E-05	15
11069.0325 P	201	5 5 1	4 4 0	224.838	3.4 E-06	15
11069.4463	003	2 1 2	1 1 1	37.136	3.63E-04	6
11069.7419 P	102	7 5 2	7 2 5	782.409	1.5 E-06	50
11070.7533	102	6 4 2	5 3 3	503.968	1.36E-05	6
11071.9079	003	4 1 3	4 1 4	224.838	1.15E-04	6
11072.8647	003	7 2 5	7 2 6	709.608	6.0 E-06	15
11073.0399	300	8 6 3	7 3 4	842.356	1.4 E-06	15
11076.1792	003	2 0 2	1 0 1	23.794	1.49E-03	6
11076.6728 P	121	6 6 1	5 2 4	416.208	2.4 E-06	20
11076.9361	102	6 5 2	5 4 1	610.340	3.35E-05	6
11077.0877	102	6 5 1	5 4 2	610.113	1.15E-05	6
11077.6433	102	6 3 3	5 2 4	416.208	6.83E-06	6
11080.1957	003	2 1 1	1 1 0	42.371	1.05E-03	6
11082.0762 B	003	7 6 2	6 6 1	1045.057	3.2 E-06	15
11082.0762 B	003	7 6 1	6 6 0	1045.058	3.2 E-06	15
11082.2024	102	7 3 4	7 0 7	586.243	1.2 E-06	15
11083.1800	003	2 2 1	2 0 2	70.090	1.10E-05	6
11085.7767 P	003	3 2 2	3 0 3	136.761	6.5 E-05	15
11086.8568 P	003	8 2 6	8 2 7	885.600	8.6 E-06	15
11087.3672	003	3 1 3	2 1 2	79.495	1.57E-03	6
11087.6375	003	3 2 2	2 2 1	134.902	7.48E-04	6
11088.1697	003	5 1 4	5 1 5	326.625	2.09E-05	6
11091.4102	003	4 2 3	4 0 4	222.052	2.4 E-05	15
11093.3854	003	3 0 3	2 0 2	70.090	5.59E-04	6
11093.5448 P	003	3 2 1	2 2 0	136.163	3.3 E-04	20
11093.6992 P	102	7 4 3	6 3 4	648.978	1.5 E-05	10
11094.5377	102	7 5 3	6 4 2	757.780	3.6 E-06	15
11095.4385	102	7 5 2	6 4 3	756.724	7.22E-06	6
11096.9129	003	4 3 2	3 3 1	285.219	1.27E-04	6
11098.1564 B•	003	9 4 6	9 2 7	1201.921	1.3 E-06	50
11098.2714 B	003	8 6 2	7 6 1	1216.193	4.2 E-06	50
11098.3091 P•	003	6 3 4	6 1 5	532.905	1.0 E-05	50
11098.3494 B	102	7 6 2	6 5 1	888.632	2.6 E-05	50
11098.3494 B	003	6 5 2	5 5 1	742.073	2.6 E-05	50
11098.4097 P	003	6 5 1	5 5 0	742.076	7.6 E-05	20
11098.7665	003	4 3 1	3 3 0	285.418	3.90E-04	6
11099.1509 P	003	7 3 5	7 1 6	704.214	9.54E-06	6
11099.2942	003	5 4 2	4 4 1	488.107	1.90E-04	6
11099.6514 P	003	5 2 4	5 0 5	325.347	5.3 E-05	20
11099.7013 P	003	5 4 1	4 4 0	488.134	5.7 E-05	20
11100.9900 P	003	5 3 3	5 1 4	399.457	1.8 E-05	15
11102.4471 P	201	11 3 9	10 1 10	1114.549	1.0 E-06	20
11103.0584 P	003	6 1 5	6 1 6	447.252	3.46E-05	6
11103.2516	003	3 1 2	2 1 1	95.175	4.70E-04	6
11103.6175	003	4 1 4	3 1 3	142.278	5.44E-04	6
11105.3682 P	003	8 4 5	8 2 6	982.912	5.6 E-07	15
11106.6365	003	4 3 2	4 1 3	275.497	4.8 E-06	15
11106.9323 P	102	8 5 4	7 4 3	931.237	5.4 E-06	20
11107.1612	003	4 2 3	3 2 2	208.301	3.00E-04	6
11107.7106	003	4 0 4	3 0 3	136.761	1.64E-03	6
11109.3843 P	003	9 3 7	9 1 8	1079.080	1.9 E-06	20
11109.4488 P	003	6 2 5	6 0 6	448.697	1.1 E-05	10
11111.3765	300	8 7 2	7 4 3	931.237	2.7 E-06	15
11113.7553	003	3 3 1	3 1 2	173.365	6.3 E-06	15
11115.5348 P	102	7 3 4	6 2 5	552.911	2.1 E-06	15
11115.9419 P	003	7 4 4	7 2 5	782.409	2.2 E-06	15
11116.0799 P	003	7 1 6	7 1 7	586.479	6.3 E-06	15
11116.3291 P	102	6 2 4	5 1 5	326.625	1.4 E-06	20
11116.6628	102	5 3 3	4 0 4	222.052	7.05E-05	6
11117.9309	003	5 3 3	4 3 2	382.516	4.46E-04	6
11118.3230	003	5 1 5	4 1 4	224.838	1.42E-03	6
11119.4030	003	4 2 2	3 2 1	212.156	8.99E-04	6
11119.9819 P	003	7 2 6	7 0 7	586.243	1.8 E-05	15
11120.9803 P	003	7 5 3	6 5 2	888.598	5.9 E-05	20
11121.0374 P	003	6 4 3	5 4 2	610.113	5.7 E-05	20
11121.1441 P	102	9 3 5	8 0 8	744.064	2.9 E-06	50
11121.2678	003	7 5 2	6 5 1	888.632	1.86E-05	6
11121.5725 P	003	5 0 5	4 0 4	222.052	4.0 E-04	10
11122.7210	003	6 4 2	5 4 1	610.340	1.66E-04	6
11123.3802	003	4 1 3	3 1 2	173.365	1.29E-03	6
11123.7319	003	5 3 2	4 3 1	383.842	1.46E-04	6
11124.6362	003	5 2 4	4 2 3	300.362	8.58E-04	6
11126.7073 P	102	6 4 3	6 1 6	447.252	4.0 E-07	50

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CM-1		J	KA	KC	J	KA	KC	E CM-1	INTENSITY CM-2 ATM-1	%
11127.4587	003	8	1	7	8	1	8	744.163	8.49E-06	6
11128.3796 P	003	6	4	3	6	2	4	802.773	8.1 E-07	50
11131.0741 P	003	2	2	0	1	0	1	23.794	3.68E-05	6
11131.9901	003	6	1	6	5	1	5	328.625	3.61E-04	6
11132.2100	003	6	0	6	5	0	5	325.347	1.03E-03	6
11133.4782	003	8	2	7	8	0	8	744.064	1 7 E-06	15
11137.2431	003	6	3	4	5	3	3	503.968	1 22E-04	6
11137.3032 P•	003	9	2	8	9	0	9	920.169	9.2 E-08	50
11137.4989 P	003	9	1	8	9	1	9	920.211	1.6 E-06	15
11139.2977	003	5	1	4	4	1	3	275.497	3.23E-04	6
11139.9359	003	6	2	5	5	2	4	416.208	1.96E-04	6
11140.8367 B	201	12	2	10	11	0	11	1327.109	5.6 E-07	50
11140.8918	003	5	4	2	5	2	3	446.510	1.9 E-06	15
11141.6270 B	102	4	4	1	3	1	2	173.365	1.2 E-04	10
11141.6270 B	003	7	4	4	6	4	3	756.724	1.2 E-04	10
11142.1445 P	003	8	5	4	7	5	3	1059.647	1 10E-05	6
11143.2043 P	003	7	1	7	6	1	6	447.252	7.0 E-04	10
11143.4320	003	5	2	3	4	2	2	315.779	2.49E-04	6
11143.8952 P	003	7	0	7	6	0	6	446.697	2.24E-04	6
11145.1579 P	003	3	3	0	3	1	3	142.278	5.6 E-07	50
11146.4217 B	003	7	4	3	6	4	2	757.780	3.55E-05	6
11146.4217 B	003	10	1	9	10	1	10	1114.549	3.55E-05	6
11149.8830	003	6	3	3	5	3	2	508.812	3.30E-04	6
11150.8533 P	003	6	1	5	5	1	4	399.457	6.6 E-04	10
11151.7817 P	003	4	4	1	4	2	2	315.779	5.6 E-07	50
11153.3143	003	7	2	6	6	2	5	552.911	4.01E-04	6
11154.2794 P	003	11	2	10	11	0	11	1327.109	4.1 E-06	50
11154.3858	003	7	3	5	6	3	4	648.978	2.05E-04	6
11154.5221	003	8	1	8	7	1	7	586.479	1.22E-04	6
11154.7652	003	8	0	8	7	0	7	586.243	4.59E-04	6
11155.6028	102	8	3	5	7	2	6	709.608	1.4 E-05	15
11156.8255	102	5	4	2	4	1	3	275.497	8.7 E-06	15
11159.3460 P	003	4	3	1	4	1	4	224.838	1.9 E-06	20
11159.6171 P•	003	3	2	1	2	0	2	70.090	5.1 E-05	50
11159.6538 P	003	7	1	6	6	1	5	542.905	1.2 E-04	20
11160.5364	003	8	4	5	7	4	4	927.744	2.03E-05	6
11161.7785	003	9	5	5	8	5	4	1255.166	1.6 E-05	15
11163.9413	003	6	2	4	5	2	3	446.510	4.96E-04	6
11164.7341	003	9	1	9	8	1	8	744.163	2.48E-04	6
11164.8453 P	003	9	0	9	8	0	8	744.064	7.3 E-05	10
11166.2100	300	6	6	1	5	1	4	399.457	2.9 E-06	15
11167.4079	003	8	1	7	7	1	6	704.214	2.04E-04	6
11167.9356 P	003	8	2	7	7	2	6	709.608	5.9 E-05	50
11167.9698 P	102	7	2	5	6	1	6	447.252	4.0 E-05	50
11169.2002	003	8	3	6	7	3	5	816.694	4.04E-05	6
11171.4945	003	8	4	4	7	4	3	931.237	5.74E-05	6
11171.8759	003	9	2	8	8	2	7	885.600	9.08E-05	6
11172.7133 P	102	4	4	0	3	1	3	142.278	3.5 E-07	50
11174.0171 P	003	10	1	10	9	1	9	920.211	6.0 E-05	50
11174.0489 P	003	10	0	10	9	0	9	920.169	1.1 E-04	50
11174.5011	102	6	4	3	5	1	4	399.457	2.84E-05	6
11174.6808	003	7	3	4	6	3	3	661.548	6.47E-05	6
11174.8210	003	9	1	8	8	1	7	882.891	3.15E-05	6
11177.3642	003	9	4	6	8	4	5	1122.709	2.82E-05	6
11179.6996 P	003	7	2	5	6	2	4	602.773	8.8 E-05	10
11180.1485 P	003	6	4	2	6	2	5	552.911	7.1 E-07	20
11180.5570	201	13	3	11	12	1	12	1557.849	1.6 E-05	15
11181.8978	003	10	1	9	9	1	8	1079.080	4.21E-05	6
11182.3551 P	003	9	3	7	8	3	6	1008.116	5.9 E-05	50
11182.3887 B	003	11	0	11	10	0	10	1114.533	6.0 E-05	50
11182.3887 B	003	11	1	11	10	1	10	1114.549	6.0 E-05	50
11187.7722	003	11	2	10	10	2	9	1293.634	1.81E-05	6
11189.9036 B	003	12	0	12	11	0	11	1327.109	2.42E-05	6
11189.9036 B	003	12	1	12	11	1	11	1327.119	2.42E-05	6
11190.0476 P	003	8	2	6	7	2	5	782.409	1.3 E-04	10
11192.2630	003	3	3	0	2	1	1	95.175	5.5 E-06	15
11192.7185	102	7	3	5	6	0	6	446.697	5.7 E-06	15

CM-1		J	KA	KC	J	KA	KC	E CM-1	INTENSITY CM-2 ATM-1	%
11194.5932 P•	003	7	4	3	7	2	6	709.608	5.6 E-07	50
11194.7976	003	4	2	2	3	0	3	136.761	7.66E-05	6
11196.3179 P	003	8	3	5	7	3	4	842.356	9.4 E-05	10
11196.7395 P	003	13	1	13	12	1	12	1557.849	8.9 E-06	10
11199.0513	003	10	2	8	9	2	7	1201.921	2.07E-05	6
11207.5389 P	102	5	4	1	4	1	4	224.838	1.9 E-06	20
11207.6231 P	003	3	3	1	2	1	2	79.495	9.1 E-06	15
11210.8193	003	4	3	1	3	1	2	173.365	4.0 E-05	15
11211.1839	300	8	6	3	7	1	6	704.214	2.6 E-06	15
11212.8460	003	9	3	6	8	3	5	1050.157	1.27E-05	6
11218.6859	102	8	2	6	7	1	7	586.479	3.0 E-06	15
11219.0399	003	10	4	6	9	4	5	1360.235	1.0 E-05	15
11223.3598	003	10	3	7	9	3	6	1282.919	1.45E-05	6
11231.1577 P	102	5	5	1	4	2	2	315.779	4.8 E-07	50
11232.0790	003	5	3	2	4	1	3	275.497	1.9 E-05	15
11234.1736	102	8	3	6	7	0	7	586.243	7.8 E-06	15
11237.1592 P	003	5	2	3	4	0	4	222.052	1.5 E-05	15
11239.8547	003	4	3	2	3	1	3	142.278	5.2 E-06	15
11240.7676	102	6	5	2	5	2	3	446.510	3.3 E-06	15
11246.5661 P	102	5	5	0	4	2	3	300.362	8.2 E-07	20
11248.0978	102	6	4	2	5	1	5	326.625	5.6 E-07	15
11249.5465	102	7	5	3	6	2	4	602.773	1.1 E-06	15
11255.4598	003	4	4	0	3	2	1	212.156	7.3 E-06	15
11255.7605	102	8	5	4	7	2	5	782.409	3.1 E-06	15
11259.0381	003	6	3	3	5	1	4	399.457	4.72E-05	6
11260.2055	300	8	7	2	7	2	5	782.409	1.9 E-06	15
11261.2613	003	4	4	1	3	2	2	206.301	2.2 E-06	15
11267.8928	102	9	2	7	8	1	8	744.163	3.7 E-06	15
11270.9918 P	102	6	5	1	5	2	4	416.208	5.1 E-07	20
11272.0564	003	5	4	1	4	2	2	315.779	4.4 E-06	15
11275.6103	003	5	3	3	4	1	4	224.838	1.48E-05	6
11285.1044	003	6	2	4	5	0	5	325.347	2.08E-05	6
11286.5520	003	6	4	2	5	2	3	446.510	1.67E-05	6
11287.0399	003	5	4	2	4	2	3	300.362	1.0 E-05	15
11293.3241 P	003	7	3	4	6	1	5	542.905	8.5 E-06	15
11295.4247	102	7	4	3	6	1	6	447.252	1.1 E-06	15
11299.2529 P	102	7	5	2	6	2	5	552.911	1.2 E-06	15
11301.4278	003	7	4	3	6	2	4	602.773	5.2 E-06	15
11311.1254	003	5	5	1	4	3	2	382.516	3.2 E-06	15
11313.5094	102	6	6	1	5	3	2	508.812	1.6 E-06	15
11314.5858	003	6	3	4	5	1	5	326.625	3.8 E-06	15
11314.9427	003	6	4	3	5	2	4	416.208	3.6 E-06	15
11320.3226	003	8	4	4	7	2	5	782.409	1.1 E-05	10
11321.1383	102	10	3	8	9	0	9	920.169	1.5 E-06	15
11331.6740	003	6	5	1	5	3	2	508.812	3.6 E-06	15
11334.4614	003	8	3	5	7	1	6	704.214	1.1 E-05	10
11335.7770	003	7	2	5	6	0	6	446.697	3.1 E-06	15
11336.4556	003	6	5	2	5	3	3	503.988	1.3 E-06	15
11345.4398	003	7	4	4	6	2	5	552.911	7.9 E-06	10
11348.3528	003	7	5	2	6	3	3	661.548	1.1 E-06	15
11353.5175	003	6	6	0	5	4	1	610.340	1.2 E-06	20
11353.7451 P	003	6	6	1	5	4	2	610.113	4.6 E-07	50
11356.1120	003	7	3	5	6	1	6	447.252	6.7 E-06	15
11360.6027 P	003	7	5	3	6	3	4	648.978	3.4 E-06	50
11377.3532	003	10	4	6	9	2	7	1201.921	1.9 E-06	15
11378.6723	003	8	4	5	7	2	6	709.608	1.6 E-06	15
11380.1106	003	9	3	6	8	1	7	882.891	1.3 E-06	15
11383.2234	003	8	6	2	7	4	3	931.237	1.1 E-06	15
11385.0970	003	8	5	4	7	3	5	816.694	7.8 E-07	20
11386.2130	003	8	2	6	7	0	7	586.243	4.2 E-06	15
11387.8907 P	003	7	7	1	6	5	2	888.598	5.2 E-07	50
11399.4137 P	003	8	3	6	7	1	7	586.479	1.2 E-06	20
11410.8305	003	9	5	5	8	3	6	1006.116	1.2 E-06	15
11414.4732	003	9	4	6	8	2	7	885.600	2.2 E-06	15
11427.1992	003	10	3	7	9	1	8	1079.080	1.5 E-06	15
11480.8045	003	10	2	8	9	0	9	920.169	8.4 E-07	20

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J	KA	KC	0 4 1 E CM-1	DELTA E 10-3CM-1	N	2 2 0 E CM-1	DELTA E 10-3CM-1	N	1 2 1 E CM-1	DELTA E 10-3CM-1	N	0 2 2 E CM-1	DELTA E 10-3CM-1	N	3 0 0 E CM-1	DELTA E 10-3CM-1	N	2 0 1 E CM-1	DELTA E 10-3CM-1	N	1 0 2 E CM-1	DELTA E 10-3CM-1	N	0 0 3 E CM-1	DELTA E 10-3CM-1	N
0	0	0	9833.5845	0.9	1	10284.3670	2.9	1	10328.7309	0.9	1				10599.6863	8.8	1	10613.3547	2.9	1	10868.8757	0.9	1	11032.4056	0.9	1
1	0	1	9857.1978	0.8	2	10307.4477	0.6	2	10351.9900	0.5	3				10622.4172	0.6	2	10636.5007	0.5	3	10891.6758	0.6	2	11055.4716	0.6	2
1	1	1	9888.8929	0.8	2	10324.8055	0.8	3	10369.7162	0.8	2				10633.5548	0.5	3	10647.4165	0.8	2	10902.9280	0.5	3	11065.7745	0.8	2
1	1	0	9895.3298	0.8	2	10330.7309	0.9	2	10375.5942	0.8	2				10639.0735	0.6	2	10652.6074	0.6	2	10908.1348	0.6	2	11071.1125	0.8	2
2	0	2	9903.4914	0.8	3	10352.4236	0.6	2	10397.2151	0.4	4				10666.4779	0.5	4	10680.5447	0.5	4	10935.8203	0.8	2	11099.9736	0.4	4
2	1	2	9929.7127	0.5	3	10385.1750	0.6	4	10410.2316	0.5	4				10673.8774	0.5	4	10687.6293	0.5	4	10943.3235	0.4	4	11106.5829	0.5	4
2	1	1	9949.0788	0.5	3	10382.8491	0.5	3	10427.6863	0.4	4				10689.6175	0.5	3	10703.0830	0.5	4	10958.9189	0.6	3	11122.5670	0.5	3
2	2	1	10039.4198	0.8	2	10439.0993	0.5	3	10480.3229	0.5	3	10670.6328	0.6	3	10724.2081	0.4	4	10737.0132	0.5	3	10992.4537	0.4	4	11153.2711	0.5	3
2	2	0	10040.3024	0.8	3	10440.1058	0.6	2	10481.5546	0.4	4				10725.4831	0.5	4	10738.4316	0.4	4	10993.8806	0.5	4	11154.8683	0.4	4
3	0	3	9970.7532	0.8	4	10417.2270	0.6	2	10462.2196	0.5	4	10655.8136	0.5	3	10729.6223	0.5	5	10743.6213	0.5	4	10999.0217	0.6	3	11163.4767	0.4	5
3	1	3	9990.3995	0.5	3	10425.1239	0.8	4	10470.3453	0.4	5				10733.5563	0.5	4	10747.2608	0.4	5	11003.0809	0.5	4	11168.8632	0.4	5
3	1	2	10028.8170	0.8	3	10460.0561	0.5	4	10504.0454	0.5	5	10698.7731	0.6	3	10784.3479	0.5	4	10777.5587	0.4	5	11033.9383	0.5	4	11198.4273	0.5	4
3	2	2	10110.5405	0.5	3	10509.5348	0.8	4	10549.9438	0.4	5				10792.7022	0.9	2	10805.0243	0.4	5	11080.8477	0.5	5	11222.5388	0.4	5
3	2	1	10114.7989	0.5	5	10513.7485	0.5	4	10555.7222	0.4	6				10798.5272	0.4	5	10811.4833	0.5	5	11067.3460	0.4	5	11229.7058	0.5	5
3	3	1	10285.8206	0.8	3	10612.2455	0.5	4	10650.0329	0.5	4				10862.6544	0.5	5	10874.5180	0.4	4	11129.7183	0.8	6	11287.1198	0.8	4
3	3	0	10285.9024	0.8	2	10612.3870	0.5	4	10650.2233	0.6	3				10862.8729	0.5	5	10874.7717	0.5	5	11129.9805	0.5	4	11287.4383	0.5	4
4	0	4	10056.9878	0.5	4	10499.8744	0.8	3	10544.9918	0.4	5				10810.1659	0.5	4	10824.1241	0.3	7	11079.6537	0.5	3	11244.4715	0.4	6
4	1	4	10070.3985	0.6	3	10504.0329	0.8	4	10549.4009	0.5	5	10742.8614	0.6	4	10811.9039	0.5	4	10825.6593	0.4	6	11081.5245	0.4	5	11245.8962	0.4	5
4	1	3	10133.8604	0.5	3	10581.0314	0.9	3	10607.6732	0.4	6				10861.6880	0.6	5	10874.0387	0.4	6	11131.5230	0.5	4	11296.7457	0.4	6
4	2	3	10204.4914	0.5	4	10598.5398	0.5	4	10641.6897	0.5	5				10883.2259	0.4	5	10894.5359	0.4	6	11150.7835	0.4	5	11313.4623	0.5	5
4	2	2	10218.4620	0.5	4	10614.4010	0.5	4	10657.1718	0.4	7				10898.0771	0.5	4	10911.1012	0.4	6	11167.4980	0.5	5	11331.5592	0.4	6
4	3	2	10382.5892	0.5	3				10745.1395	0.4	6				10955.9734	0.4	7	10967.4382	0.4	6	11223.0867	0.4	6	11382.1328	0.4	6
4	3	1	10383.1247	0.5	5				10748.1475	0.4	5				10957.4221	0.5	4	10969.1188	0.4	7	11224.8298	0.5	5	11384.1851	0.5	5
4	4	1	10559.5387	0.9	2				10877.3449	0.9	3	11061.2735	0.5	4	11048.3833	0.5	6	11060.2962	0.9	1	11314.9939	0.4	5	11467.5825	0.5	4
4	4	0	10559.5588	0.9	2				10877.3695	0.5	4	11061.2992	0.6	3	11048.4128	0.9	3	11060.3339	0.5	4	11314.9908	0.5	5	11467.8158	0.5	3
5	0	5	10160.8560	0.6	2	10599.2394	2.8	3	10644.6204	0.6	5				10907.6833	0.8	6	10921.6826	0.5	5	11177.3580	0.5	4	11343.6246	0.4	6
5	1	5	10169.0593	0.8	3	10601.2666	0.8	4	10646.7808	0.4	5				10908.3680	0.8	4	10922.2586	0.4	6	11178.1874	0.4	6	11343.1614	0.4	5
5	1	4	10282.1892	0.8	3				10730.2038	0.4	6				10979.3404	0.5	5	10996.0646	0.5	3	11249.2883	0.4	6	11414.7949	0.4	6
5	2	4	10320.5893	0.4	4	10712.1195	2.8	2	10754.7530	0.4	6				10988.9863	0.4	6	11004.7831	0.4	6	11261.3154	0.4	6	11424.9985	0.5	6
5	2	3	10345.9078	0.8	3	10742.0499	0.4	5	10785.6543	0.5	5				11023.3986	0.4	5	11038.3765	0.4	7	11293.2966	0.4	6	11459.2118	0.5	5
5	3	3	10483.4278	0.4	5	10824.9746	0.6	4	10863.6710	0.4	6				11072.4394	0.4	6	11083.3595	0.4	7	11338.7147	0.4	7	11500.4478	0.4	6
5	3	2	10485.5444	0.5	3				10867.7469	0.5	5				11077.6701	0.6	5	11089.3468	0.4	5	11345.7234	0.4	5	11507.5754	0.5	5
5	4	2	10680.9899	0.5	4				10998.3088	0.4	8	11182.2168	0.5	5	11165.4854	0.6	7	11176.8802	0.4	5	11432.3224	0.5	6	11587.4026	0.4	6
5	4	1	10681.1033	0.8	3				10996.5478	0.5	4	11182.4162	0.6	4	11165.7198	0.5	5	11177.1315	0.4	7	11432.3753	0.4	6	11587.8357	0.5	4
5	5	1	10911.2899	1.7	4				11158.5002	0.9	3				11283.5654	0.9	4	11293.8712	0.3	7	11546.9369	0.8	5	11693.6430	0.8	3
5	5	0	10911.3186	8.8	1				11158.4949	2.8	4				11283.5768	0.5	5	11293.7567	0.5	4	11546.9289	0.8	5	11693.6438	8.4	2
6	0	6	10281.0557	0.6	3	10715.4348	0.6	3	10761.0463	0.4	5				11022.3485	0.5	4	11036.4373	0.4	6	11292.1046	0.6	3	11457.5574	0.6	2
6	1	6	10286.1346	0.8	2	10716.3092	0.6	4	10762.0462	0.8	5				11022.5932	0.8	3	11036.8543	0.5	6	11292.4987	0.8	5	11458.8152	0.5	5
6	1	5	10412.5741	0.6	3				10872.3522	0.5	5				11114.9009	2.1	4	11129.8824	0.4	6	11384.8828	0.5	3	11550.3107	0.4	5
6	2	5	10458.0628	0.9	3				10888.3118	0.5	6				11120.5155	0.4	5	11134.0307	0.6	5	11391.4788	0.4	5	11558.1450	0.5	6
6	2	4	10502.8868	0.6	3				10939.5481	0.4	7				11172.7543	0.4	5	11185.3400	0.3	8	11442.9539	0.4	7	11610.4514	0.4	7
6	3	4							11005.2582	0.5	6				11211.5073	0.4	6	11221.5969	0.4	7	11478.6934	0.4	6	11641.2114	0.5	6
6	3	3	10633.9772	0.8	6				11018.2357	0.4	7				11224.7793	0.8	5	11236.5818	0.3	8	11493.8527	0.4	6	11658.4954	0.4	8
6	4	3							11140.0756	0.4	6				11306.1048	0.4	7	11317.0382	0.5	6	11573.9592	0.4	8	11731.1519	0.8	5
6	4	2	10827.0266	0.5	4				11140.1405	0.8	8	11328.2721	0.5	5	11307.4058	0.5	8	11318.5454	0.4	7	11574.7220	0.5	7	11733.0822	0.4	8
6	5	2							11301.2080	0.7	3				11423.9298	0.4	5	11433.7521	0.5	5	11887.2772	0.4	4	11840.4231	0.8	4
6	5	1							11301.1502	0.5	5				11424.0317	0.6	4	11433.8430	0.5	6	11887.2020	0.5	6	11840.4860	0.4	5
6	6	1							11492.8814	0.5	5				11565.6877	0.4	7	11575.1504	0.9	2	11822.3208	0.8	4	11963.8584	2.7	3
6	6	0							11493.0179	0.6	3				11565.6639	2.9	2	11575.1547	0.5	5	11822.3018	8.4	2	11983.8581	0.5	3

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J	KA	KC	041 E CM-1	DELTA E 10-3CM-1	N	220 E CM-1	DELTA E 10-3CM-1	N	121 E CM-1	DELTA E 10-3CM-1	N	022 E CM-1	DELTA E 10-3CM-1	N	300 E CM-1	DELTA E 10-3CM-1	N	201 E CM-1	DELTA E 10-3CM-1	N	102 E CM-1	DELTA E 10-3CM-1	N	003 E CM-1	DELTA E 10-3CM-1	N
7	0	7	10418.1024	0 9	2	10848.4533	0 9	3	10894.4854	0 5	3				11154.2064	0 6	4	11168.5535	0 5	5	11424.3380	0 9	2	11590.5927	0 5	4
7	1	7	10421.0437	0 6	3	10848.8662	0 9	3	10893.8230	0 4	5				11154.3983	0 5	4	11167.5052	0 4	5	11424.5318	0 6	4	11590.4569	0 5	3
7	1	6	10582.7728	0 9	2	10985.8708	0 5	4	11031.8641	0 5	5				11266.9839	0 4	5	11281.4997	0 4	6	11537.0894	0 4	5	11702.5597	0 5	5
7	2	6	10618.1248	0 6	4				11041.3204	0 4	6				11288.6943	0 5	6	11283.1409	0 4	8	11540.4441	0 5	4	11706.2256	0 4	8
7	2	5	10685.3912	0 9	2				11118.4957	0 5	5				11343.8223	0 4	8	11355.1994	0 4	8	11615.2241	0 4	8	11782.4734	0 4	8
7	3	5				11131.0401	0 6	4	11170.3190	0 4	7	11361.0038	0 5	5	11372.5672	0 4	5	11381.2322	0 4	8	11639.4141	0 5	4	11803.3848	0 4	7
7	3	4							11192.1280	0 5	5				11398.8658	0 5	7	11410.5687	0 4	8	11668.4473	0 4	6	11838.2295	0 5	5
7	4	4							11308.7869	0 4	7				11470.1813	0 5	5	11480.4987	0 4	8				11898.3515	0 5	4
7	4	3							11308.8962	0 5	4	11499.4230	0 6	6	11474.0562	0 5	5	11485.3489	0 5	6	11742.8774	0 4	8	11904.2017	0 5	6
7	5	3							11487.9720	0 4	5				11587.7205	0 7	6	11597.3435	0 4	7	11852.3192	0 5	5	12009.5785	0 8	5
7	5	2							11487.8349	0 5	4				11588.1543	0 6	8	11597.7081	0 5	5	11852.1635	0 5	7	12009.9005	0 5	4
7	6	2							11682.3361	0 5	4							11739.1733	0 4	6	11986.9805	0 7	3	12127.1328	0 5	3
7	6	1							11682.4454	0 7	3							11739.1740	1 7	3				12127.1430	1 7	3
7	7	1							11914.6459	0 7	3							11862.1045	0 8	3				12276.4944	0 5	4
7	7	0							11914.6462	2 1	2							11862.1071	2 9	2				12276.4938	2 1	2
8	0	8	10571.9556	0 6	2				11045.3901	0 5	5				11303.5226	0 6	4	11317.2562	0 5	5	11574.1652	0 8	4	11741.0088	0 5	4
8	1	8	10573.6006	0 9	2				11045.1471	0 5	4				11302.9240	0 5	5	11317.8802	0 5	3	11574.3645	0 5	4	11741.0021	0 6	4
8	1	7	10770.9641	0 9	3				11207.7488	0 4	6				11435.4628	0 7	4	11449.5134	0 4	8	11705.8848	0 5	4	11871.8218	0 4	5
8	2	7	10794.0232	0 9	2				11213.9035	0 5	4				11436.4477	0 5	5	11450.2126	0 8	5	11707.8998	0 5	4	11877.5422	0 5	4
8	2	6							11322.4512	0 5	5				11533.9728	0 7	4	11542.1864	0 5	6	11805.1658	0 5	4	11972.4573	0 3	7
8	3	6				11310.0760	0 9	3	11354.5724	0 5	5	11547.8427	0 4	6	11555.1222	0 4	6	11561.1407	0 4	8	11820.4181	0 4	4	11985.8955	0 5	4
8	3	5							11395.4897	0 8	3				11599.2271	0 6	5	11609.5627	0 4	6	11865.2112	0 5	4	12038.8737	0 4	8
8	4	5							11497.1826	0 6	5				11655.8454	0 4	7	11666.6606	0 5	7				12088.2806	0 5	5
8	4	4							11502.9719	0 4	6				11668.9037	0 5	6	11678.7769	0 4	7				12102.7322	0 4	5
8	5	4													11774.8289	0 4	6	11784.4252	0 5	4	12038.1699	0 4	6	12201.7920	0 6	3
8	5	3							11659.2907	0 4	7							11785.7103	0 5	5						
8	6	3													11915.3968	0 4	7	11926.4652	0 9	3						
8	6	2																11926.4851	0 6	4				12314.4596	0 6	4
8	7	2													12042.6146	0 5	8	12052.3638	2 8	3						
8	7	1																12052.3635	0 5	4						
9	0	9	10742.8083	0 9	2				11212.0330	0 7	3				11469.8342	0 6	3	11484.6112	0 6	5	11743.6163	0 4	4	11908.9098	0 7	3
9	1	9	10743.8530	0 9	2				11213.8559	0 6	5				11469.9188	0 7	4	11484.4893	0 5	3	11743.6970	2 9	1	11908.8950	0 8	3
9	1	8							11399.9997	0 5	4				11620.7444	0 5	4	11634.9843	0 5	6	11891.7554	0 4	5	12057.7113	0 5	5
9	2	8							11404.1269	0 9	2							11634.9497	0 4	7				12057.4768	0 5	4
9	2	7							11537.9761	0 5	5				11739.0525	0 8	4	11755.7871	0 7	5	12012.0563	0 4	7			
9	3	7	11207.3007	2 9	2				11560.2015	0 5	3							11761.3666	0 4	7				12188.4684	0 8	3
9	3	6				11310.0781	0 9	1							11815.1378	0 4	4	11830.9725	0 5	5				12283.0027	0 8	4
9	4	6							11710.3009	0 6	3							11874.4931	0 5	8				12300.0735	0 4	5
9	4	5													11886.5774	0 6	4	11899.2786	0 6	5						
9	5	5							11873.4886	0 5	5							11994.6782	0 4	5				12416.9451	0 5	4
9	5	4													11988.6718	0 4	5	11998.4830	0 6	5						
9	6	4																12137.4851	0 4	4						
9	6	3																12137.8133	0 5	4						
10	0	10	10930.8567	0 9	2				11398.1253	0 6	3							11668.7215	0 8	3				12094.2178	0 6	3
10	1	10							11398.1641	2 8	2							11668.7255	0 9	4				12094.2185	2 8	3
10	1	9							11611.1779	0 9	2							11836.7693	0 4	5				12260.9778	0 9	3
10	2	9													11822.6099	0 5	4	11838.2928	0 7	4						
10	2	8							11769.2602	0 6	3							11980.5597	0 4	6				12400.9730	0 9	2
10	3	8													11967.9172	0 4	5	11979.8543	0 6	6	12241.3077	0 5	6			
10	3	7																12071.8710	0 4	8				12506.2791	0 6	5
10	4	6																12145.9158	0 4	6				12579.2753	0 6	3

TABLE 3 (continued) page 2 (Can. J. Phys. CHEVILLARD et al.

J	KA	KC	1 2 1 E CM-1	DELTA E 10-3CM-1	N	2 0 1 E CM-1	DELTA E 10-3CM-1	N	0 0 0 E CM-1	DELTA E 10-3CM-1	N
11	0	11				11870.0681	2.8	2	12296.9372	2.9	2
11	1	11	11598.2976	0.9	2	11870.0743	0.5	4	12298.9425	0.9	2
11	1	10				12058.2515	1.0	3			
11	2	10				12056.2047	0.5	4	12481.4065	0.9	4
11	3	9				12216.9582	0.4	5			
11	4	8				12353.4648	0.6	3			
12	0	12				12088.6129	0.9	2	12517.0132	0.9	2
12	1	12				12088.5554	0.7	2	12517.0227	3.0	1
12	1	11				12292.8190	0.6	3			
12	2	11				12292.7991	0.7	3			
12	2	10				12487.9536	0.7	5			
13	0	13				12324.2802	2.9	2			
13	1	13				12324.2853	0.9	2	12754.5891	0.9	1
13	2	12				12548.5899	0.8	4			
13	3	11				12738.4068	0.9	1			
14	0	14				12577.0068	0.9	2			
14	1	14				12577.0082	2.9	2			
16	0	16				13133.6497	1.0	1			
16	1	16				13133.6500	3.0	1			

TABLE 3 (Concluded) page 3 Can. J. Phys.

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SIGMA	VIB	J'KA'KC'	J"KA"KC"	S01	S02	R
10407.1230	(121)	4 1 4	3 1 3	5.50 E-4	5,34 E-4	0.971
10415.0423	(121)	3 2 2	2 2 1	7.40 E-4	7.63 E-4	1.031
10421.9428	(121)	5 1 5	4 1 4	1.39 E-3	1.42 E-3	1.022
10435.6980	(121)	6 0 6	5 0 5	1.03 E-3	1.08 E-3	1.049
10438.7896	(300)	2 2 1	3 3 0	3.65 E-4	3.56 E-4	0.975
10445.0165	(121)	4 2 2	3 2 1	9.36 E-4	9.51 E-4	1.016
10454.3906	(121)	5 2 4	4 2 3	8.84 E-4	8.81 E-4	0.997
10460.7294	(121)	4 3 1	3 3 0	3.82 E-4	4.43 E-4	1.160
10463.9858	(300)	3 1 2	4 2 3	5.48 E-4	5.58 E-4	1.018
10468.3882	(201)	2 0 2	3 2 1	1.46 E-4	1.55 E-4	1.062
10483.7683	(300)	4 2 3	5 1 4	2.45 E-3	2.20 E-3	0.898
10492.3392	(201)	3 1 2	3 3 1	3.86 E-5	3.28 E-5	0.850
10495.7039	(201)	3 2 1	4 2 2	1.84 E-3	1.80 E-3	0.978
10497.3908	(300)	1 1 1	2 2 0	2.06 E-4	1.97 E-4	0.956
10502.0616	(201)	3 1 2	4 1 3	2.43 E-3	2.40 E-3	0.988
10504.1719	(300)	1 1 0	2 2 1	4.93 E-4	4.81 E-4	0.976
10520.4090	(121)	4 2 2	3 0 3	3.40 E-5	2.97 E-5	0.874
10523.7626	(201)	4 0 4	4 2 3	7.34 E-4	7.03 E-4	0.958
10524.1993	(300)	2 0 2	3 1 3	2.88 E-4	2.74 E-4	0.951
10526.2756	(201)	2 2 0	3 2 1	5.09 E-3	4.97 E-3	0.976
10530.7118	(201)	2 2 1	3 2 2	1.79 E-3	1.62 E-3	0.905
10534.6695	(300)	4 0 4	4 1 3	8.37 E-5	7.39 E-5	0.883
10537.3185	(201)	3 0 3	3 2 2	2.36 E-4	2.12 E-4	0.898
10550.8425	(300)	2 2 1	3 1 2	4.86 E-4	4.03 E-4	0.829
10552.1920	(300)	3 1 2	3 2 1	2.33 E-4	2.12 E-4	0.910
10553.4539	(300)	2 1 1	2 2 0	5.23 E-5	4.94 E-5	0.945
10556.2574	(300)	3 0 3	3 1 2	4.31 E-4	3.90 E-4	0.905
10573.6887	(300)	3 2 1	4 1 4	1.87 E-4	1.41 E-4	0.754
10573.8952	(201)	3 1 3	3 1 2	2.28 E-3	2.08 E-3	0.912
10578.7568	(201)	4 2 3	4 2 2	9.25 E-4	8.93 E-4	0.965
10600.8494	(201)	2 2 1	2 2 0	4.70 E-3	4.63 E-3	0.985
10607.4590	(201)	3 0 3	2 2 0	4.64 E-5	5.02 E-5	1.082
10610.7394	(201)	4 2 2	4 2 3	2.45 E-3	2.45 E-3	1.000
10611.9686	(201)	4 0 4	3 2 1	1.74 E-4	1.60 E-4	0.920
10627.5864	(300)	3 1 2	3 0 3	5.87 E-4	5.66 E-4	0.964
10631.6995	(300)	7 4 3	7 3 4	7.20 E-5	8.21 E-5	1.140
10635.2805	(201)	3 1 2	3 1 3	6.20 E-4	5.52 E-4	0.890
10649.2024	(201)	4 1 3	4 1 4	5.95 E-4	6.67 E-4	1.121
10650.7169	(300)	3 3 0	3 2 1	4.79 E-4	4.06 E-4	0.848
10655.6114	(300)	4 3 2	4 2 3	5.61 E-4	5.25 E-4	0.936
10658.3878	(300)	4 2 3	4 1 4	9.71 E-4	8.84 E-4	0.910
10668.2629	(201)	3 2 2	3 0 3	6.39 E-4	5.35 E-4	0.837
10669.4388	(201)	5 1 4	5 1 5	2.89 E-4	2.54 E-4	0.879
10670.1227	(201)	3 2 2	2 2 1	7.11 E-3	7.09 E-3	0.997
10672.4839	(201)	4 2 3	4 0 4	1.96 E-4	1.94 E-4	0.990
10675.1427	(300)	4 1 4	3 0 3	1.23 E-3	1.10 E-3	0.894
10675.3197	(201)	3 2 1	2 2 0	2.37 E-3	2.30 E-3	0.970
10679.4357	(201)	5 2 4	5 0 5	4.36 E-4	4.25 E-4	0.975
10682.8493	(300)	5 0 5	4 1 4	5.65 E-4	5.27 E-4	0.933
10695.7234	(300)	6 0 6	5 1 5	1.55 E-4	1.54 E-4	0.994
10709.8603	(300)	4 2 3	3 1 2	1.22 E-3	1.18 E-3	0.967
10713.4897	(300)	5 2 4	4 1 3	1.59 E-3	1.56 E-3	0.981
10726.4905	(300)	3 3 1	2 2 0	4.14 E-5	4.28 E-5	1.034

TABLE 4 Can. J. Phys. CHEVILLARD et AL.